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Oil and Gas Development in Illinois in 1938

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(New York Meeting, February, 1939)

THE upswing in oil production and drilling activity in Illinois that began in 1937 gained momentum in 1938 and promises to bring a new and higher peak in the state's annual production in 1939. In 1938 the production totaled 23,929,000 bbl., as compared with 7,426,000 bbl. in 1937, more than a threefold increase. The number of producing oil wells in the new fields was 230 at the end of 1937 and it increased to 2157 at the end of 1938. Daily production for the whole state increased from approximately 35,000 bbl. at the end of 1937 to approximately 135,000 bbl. at the end of 1938, nearly a fourfold increase.

Of a total of 2539 wells completed in 1938 in Illinois, 1984 produced oil, 26 produced gas and 529 were dry holes. Of the total, 377 are classified as "wildcat" wells, defined as wells drilled outside of proved territory and more than one mile from the nearest production. The remainder, 2162 wells, were drilled in or near proved fields.

Of the 377 wildcat wells (Table 2) 32 were successful in discovering oil or gas in commercial quantities, either new fields or extensions of old fields. Four of these discovery wells were gas wells, which are not yet commercially productive owing to lack of pipe-line facilities.

A special effort was made to ascertain the reasons for the locations of as many as possible of the wildcat wells and the results of this investigation are set forth in the following table:

Reason for Drilling	Total Number	Successful	Per Cent
Geology.....	30	9	30
Geophysics.....	14	4	29
Geology and geophysics.....	25	12	48
Total, scientific.....	69	25	36
Geologic information available, but not favorable.....	9	0	0
Not based on geologic or geophysical information.....	91	3	3
Unknown.....	208	4	2
	377	32	8.5

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There is a striking contrast between the percentage of successes of the locations made with and without scientific aid; 36 per cent as against 3 per cent. Although this preponderance in favor of the scientifically made locations would probably be reduced somewhat if complete data were available, there is little doubt that the great majority of the 208 wildcat locations for which the data could not be obtained were made

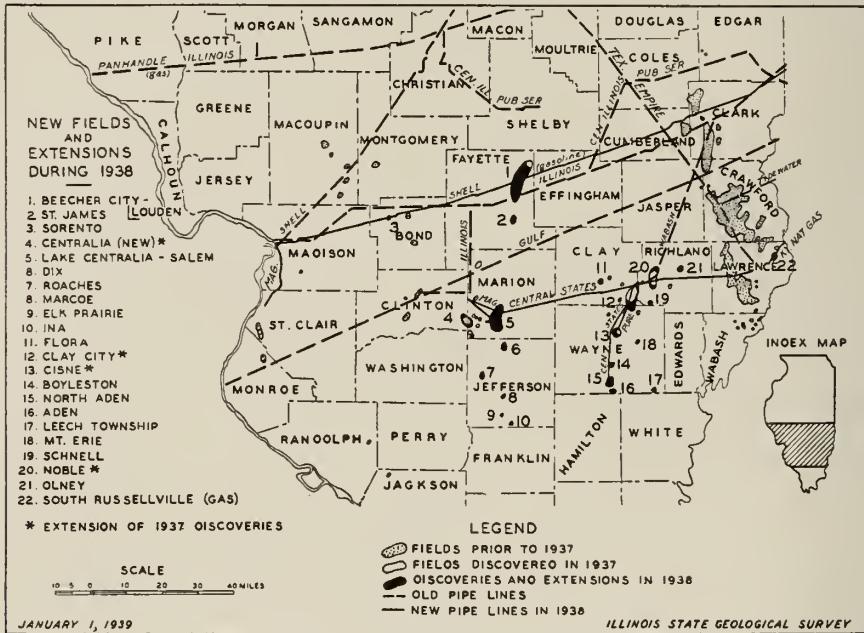


FIG. 1.—OIL AND GAS FIELDS IN ILLINOIS IN 1938.

without benefit of either geologic or geophysical recommendations, probably, in many cases, to fulfill contracts.

ECONOMIC DATA

Exact data on value at the wells of the crude oil produced in Illinois in 1938 are not at hand. Posted prices were as follows:

	PRICE PER BARREL
Old fields:	
January 1–September 27.....	\$1.35
September 27–October 13.....	1.25
October 13–December 31.....	1.05
New fields:	
January 1–May 25.....	1.35
May 25–October 1.....	1.25
October 1–December 31.....	1.15

On the basis of posted prices, the total value of the 1938 production was approximately \$29,300,000. Dividing this by the number of barrels of



oil produced, it is calculated that the average price per barrel for the year was \$1.22. However, it is reported that considerable quantities of oil in some fields were sold below the posted price, therefore it may be assumed that the total returns from the oil were less than the total mentioned above.

No exact data are available as to drilling costs. A total of 4,766,047 ft. of hole was drilled in the state in 1938. If an average cost for all drilling in the state is assumed to be \$3 per foot, it is calculated that there was a total investment in drilling of \$14,298,141. This includes both producing wells and dry holes. There were, of course, large additional investments in leasing, equipping and operating wells, in storage tanks, pipe lines, warehouses, etc., for which even an approximation is not possible at this time.

The average depth of all wells drilled in the state in 1938 was 1870 ft. and the average initial daily production of the oil wells was 274 bbl. (For details see Tables 3 and 4.)

PIPE LINES AND REFINERIES

Although the new oil reserves of Illinois enjoy the advantage of close proximity to a large market for refined products, the disposal to refineries of the rapidly increasing amounts of crude oil produced has presented some problems. These have been met in part by the construction of new pipe lines and substantial quantities of oil have been transported by rail and truck.

There has been a considerable amount of "pipe-line proration"; that is, curtailment of production by oil buyers, notably in the Centralia and Louden fields. There is no regulation of oil production in Illinois by any State authority.

The new Central States pipe line (Texas Company subsidiary) extends from the Salem field to the Indian Refinery at Lawrenceville (Fig. 1). It was put in operation on Nov. 14, 1938. It furnishes sufficient oil to run the refinery, and the surplus oil is transported north through the old Texas-Empire branch pipe line, which joins the main line at Heyworth (south of Bloomington, McLean County). From there the oil goes north to the Texas Company's refinery at Lockport, and other refineries in the Chicago district.

The Magnolia Petroleum Co. transports oil from the Salem pool to East St. Louis via Sandoval, Vandalia and Wood River.

Three small refineries were constructed at Centralia (capacity 2000 bbl. per day each) and one at St. Elmo (capacity 3500 bbl.).

The oils from the new Illinois fields range in gravity from 37° to 39° A.P.I., averaging approximately 38°. Sulphur content ranges from 0.12 to 0.18 per cent. These oils are similar to Mid-Continent crudes in their general characteristics (Table 1).

EXPLORATION METHODS

The principal methods used in guiding exploration and development are subsurface geology and geophysics, largely the reflection seismograph. Nearly 100 petroleum geologists are now making investigations of Illinois geology. Use is made of driller's logs, drilling-time logs, sample and core studies, electrical logs, and micropaleontology. Some of the oil companies are depending on electrical logs to make structural studies and correlations in fields because they are more quickly made than sample study logs. However, there appears to be no substitute for sample studies in attacking the regional problems of stratigraphy, sedimentation and structure.

The extent of reflection seismograph surveys for 1938 in Illinois is indicated by the following figures:

DATE	NUMBER OF SEISMOGRAPH PARTIES ACTIVE IN ILLINOIS
January 1, 1938	11
April 1, 1938	9
July 1, 1938	7
October 1, 1938	16
January 1, 1939	11

During the year approximately 196 townships (7056 square miles) were covered by seismograph surveys, mostly in the Illinois Basin.

Other geophysical methods, notably gravimeters and magnetometers, are being used to a relatively small extent and a few companies are engaged in structure test drilling.

The course of development during 1938 and the last eight months of 1937 is illustrated in the bar chart showing production by months (Fig. 2). Total lengths of the bars represent monthly production for the whole state. The bars are divided into old fields (stippled) and new fields (shaded): dark shading, limestone production, and light shading, sandstone production.

The limestone production is almost all from the "McClosky sand," which is a porous, oölitic zone in the Fredonia member of the Ste. Genevieve formation (Fig. 3). The McClosky production had its most rapid rise during the summer of 1937. The wells had large initial productions, but they also had rapid declines during the first few months. Average depth of the McClosky wells in the central part of the basin is approximately 3000 ft. (Table 1).

Development in 1938 consisted largely of the development of the comparatively shallow sandstone fields in the western part of the Illinois Basin where production is obtained from depths varying from 1300 to 1800 ft. The principal producing sands are the Cypress (called variously Carlyle, Stein, Weiler and Kirkwood) and the Benoit (Bethel formation) called Tracy in Lawrence County. The three most important fields in

this region are the Salem (Lake Centralia), the Louden (Beecher City), and the Centralia. Daily production of these wells at the end of 1938 was: Salem, 50,300 bbl., an average of 105 bbl. per well; Louden, 22,000 bbl., average 44 bbl. per well; Centralia (New), 7500 bbl., average 14 bbl.

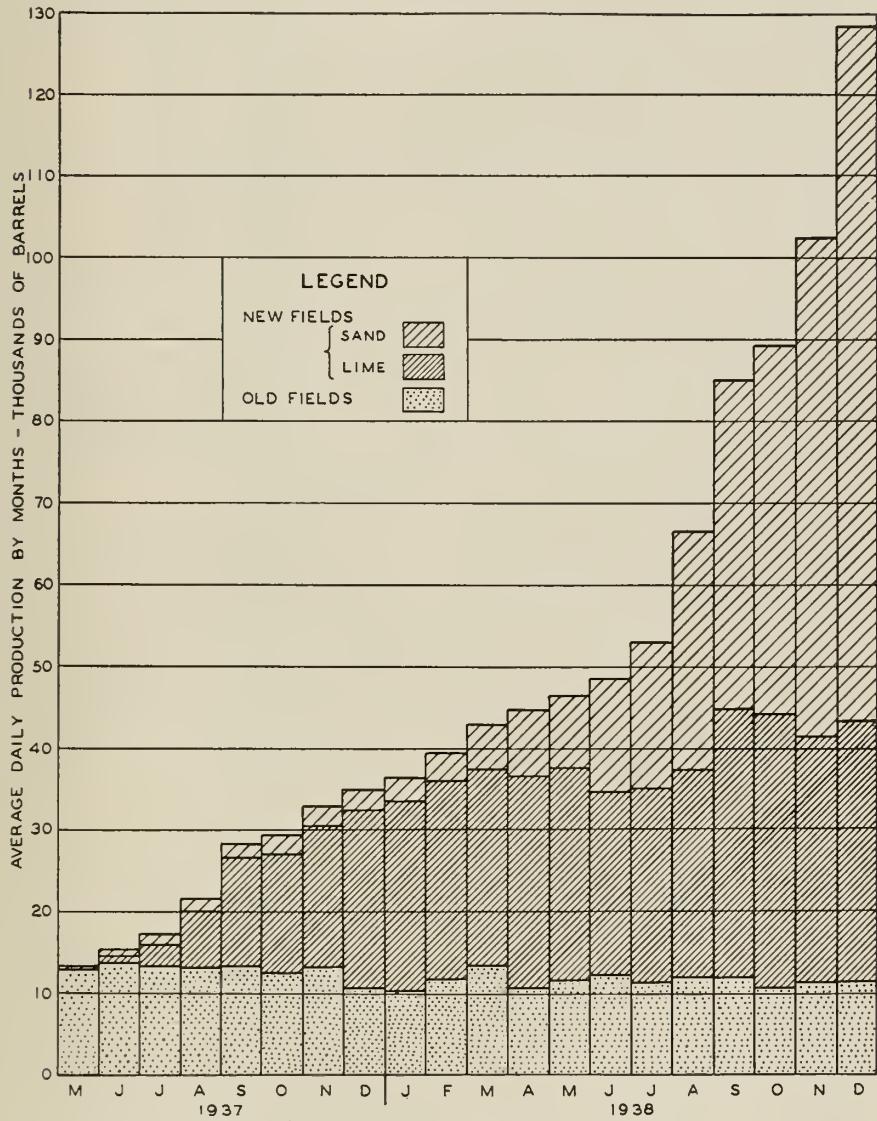


FIG. 2.—PRODUCTION OF CRUDE OIL IN ILLINOIS.

per well. Other details are given on lines 90, 84 and 94, respectively of Table 1. The Louden (Beecher City) and Centralia fields were discovered late in 1937, but had their major development in 1938. Centralia was outlined by early summer and was nearly completely drilled up by

the end of the year. Louden (Beecher City), on the other hand, was less than half developed at the end of 1938. Salem has had a remarkably rapid development; its discovery well was completed July 6, and it bids fair to outrank the best of the old fields—Lawrence County—in yield per acre.

Numerous new McClosky lime discoveries were made in the latter half of 1938. Of these, the North Aden pool in Wayne County appears to be the most important. For a detailed statement of wells and drilling operations in the new fields at the end of 1938 see Table 5. Data on discovery wells are given in Table 6.

DRILLING TO DEVONIAN AND DEEPER

Fifty-three wells reaching the Devonian limestone or deeper were completed in Illinois in 1938. Of these, two discovered oil in commercial quantities in the Devonian; one was a small gas well in the Pennsylvanian; one was the discovery well for Benoist production in the Dix pool, Jefferson County; five were Trenton lime producers in the Dupo field, St. Clair County; one was a small Hoing sand producer in the Colmar-Plymouth field, McDonough County; and the remainder were dry holes. Five of these wells reached the St. Peter sandstone, which is correlated with the Wilcox sand of Oklahoma. The St. Peter sandstone has not yet yielded any oil in Illinois.

Oil in commercial quantity was recently discovered in the Devonian limestone at a depth of 2920 ft. in the old Sandoval field, which has been producing for 30 years from the Benoist sand at an average depth of

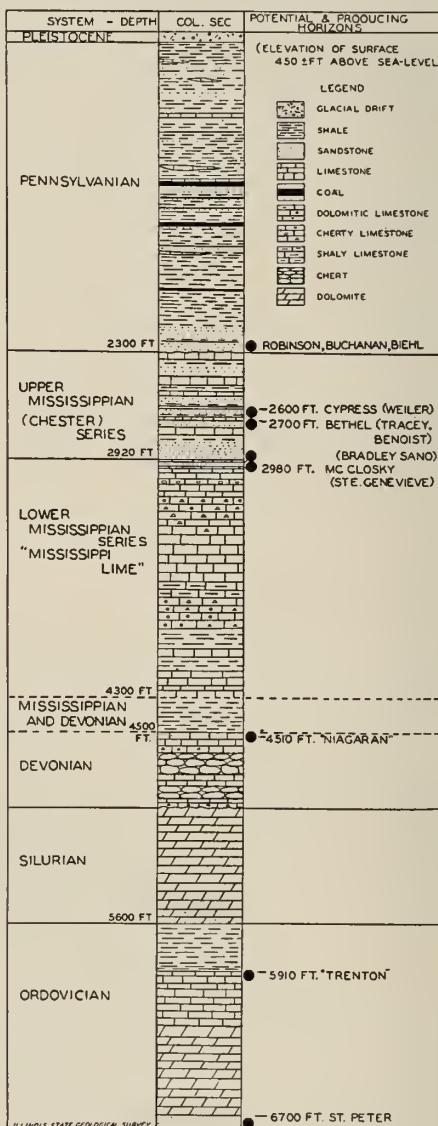


FIG. 3.—GENERALIZED GEOLOGIC COLUMN, ILLINOIS BASIN FIELDS IN CLAY, RICHLAND AND WAYNE COUNTIES.

1550 ft. This is especially significant because it suggests the possibility of extensive Devonian oil on favorable structures in the Illinois Basin. Some of these—for example, the Louden (Beecher City) and Salem (Lake Centralia) structures—are known to be much larger than the Sandoval structure.

TABLE 1.—*Oil and Gas Production in Illinois in 1938*

Line Number	Field, County	Area Proved, Acres		Total Oil Production, Bbl.		Total Gas Production, Millions Cu. Ft.		Number of Oil and/or Gas Wells			
		Oil	Gas ^a	To End of 1938	During 1938	To End of 1938	During 1938	Completed to End of 1938	Completed	Abandoned	Producing Oil ^b
		Age, Years to End of 1938									Producing Gas ^c
1	Warrenton-Borton, Edgar	32	100	0	29,030±	630	0	0	22	0	13
2	Westfield (Parker Twp.), Clark, Coles	34	9,000	55	x	x	0	1,621	5	40	332
3			850	75	x	x	0	185	0	0	y
4			9,000	0	x	x	0	1,443	5	0	y
5			1,500	0	x	x	0	12	0	0	y
6	Siggins (Union Twp.), Cumberland, Clark.....	32	3,580	75	x	x	0	995	0	0	914
7			3,135	55	x	x	0	854	0	0	y
8			435	15	x	x	0	90	0	0	y
9			855	105	x	x	0	192	0	0	y
10	York, Cumberland.....		310	40	x	x	0	70	0	0	44
11	Casey, Clark.....	31	1,925	55	x	x	0	532	0	0	471
12			190	15	x	x	0	41	0	y	0
13			400	0	x	x	0	82	0	y	0
14			1,525	15	x	x	0	319	0	y	y
15	Martinsville, Clark.....	31	710	155	x	x	0	213	0	4	122
16			15	20	x	x	0	7	0	0	y
17			275	35	x	x	0	63	0	0	y
18			105	0	x	x	0	21	0	0	y
19			170	0	x	x	0	34	0	0	y
20			195	0	x	x	0	39	0	0	y
21			5	0	x	x	0	1	0	0	1
22	North Johnson, Clark....	31	1,320	20	x	x	x	485	0	0	448
23			1,115	0	x	x	x	296	0	0	y
24			160	0	x	x	x	32	0	0	y
25			820	5	x	x	x	177	0	0	y
26			215	0	x	x	x	44	0	0	y
27	South Johnson, Clark....	31	1,715	65	x	x	x	534	0	0	486
28			185	5	x	x	x	38	0	0	y
29			295	0	x	x	x	59	0	0	y
30			1,675	35	x	x	x	401	0	0	y
31			845	5	x	x	x	170	0	0	y
32	Bellair Crawford, Jasper.	31	1,300	5	x	x	x	485	0	0	403
33			1,165	0	x	x	x	309	0	0	y
34			315	0	x	x	x	63	0	0	y
35			910	0	x	x	x	182	0	0	y
36	Clark County Division ¹	19,960	475	52,105,000±	193,000	x	y	4,982	5	44	3,234
37	Main,* Crawford.....	32	35,135	515	x	x	x	7,322	3	38	5,193
38			340	0	x	x	x	68	0	y	0
39			33,795	510	x	x	x	7,141	0	0	y
40			1,000	0	x	x	x	108	0	y	y

^aFootnotes to column heads and explanation of symbols are given on page 27.¹Total of lines 1, 2, 6, 10, 11, 15, 22, 27, 32.²Includes Kibbie, Oblong, Robinson and Hardinsville.

TABLE 1.—(Continued)

Line Number	Oil-production Methods at End of 1938			Pressure, Lb. per Sq. In. ²²	Character of Oil, Approx. Average during 1938	Producing Formation								Deepest Zone Tested to End of 1938				
	Number of Wells					Average at End of		Gravity A.P.I. at 60° F. ²³	Name	Age ²⁴	Depth, Average in Feet		Porosity ²⁵	Net Thickness, Average in Feet				
	Flowing	Pumping	Air, Gas, Water Lift			Initial	1937				Bottoms of Productive Wells	To Top of Productive Zone						
1	0	13		200±		x	x	34.0	Unnamed	Pen	215	159	S	Por	x	ML		
2	0	332							See below	D	Pen	Trenton			715	2,918		
3	0	y		x	x	x	x	30.0	Shallow gas sand	Pen	376	281	S	Por	36	D		
4	0	y		x	x	x	x	33.5	Westfield lime	MisL	446	334	L	Cav	x	D	St. Peter	3,009
5	0	y		x	x	x	x	37.0	Trenton (Ord)	Ord	2,568	2,265	L	Por	x	D		
6	0	914 ²⁴		x	x	x	x	33.0	See below						D	Dev. limestone	2,010	
7	0	y		x	x	x	x	34.0	First Siggins sand	Pen	465	367	S	Por	x	D		
8	0	y		x	x	x	x	(33.6)	Second and third Siggins sand	Pen	562	478	S	Por	x	D		
9	0	y		x	x	x	x	(25.7)	Lower Siggins sand	Pen	590	556	S	Por	x	D		
10	0	44		x	x	x	x	(30.3)	York sand	Pen	680	588	S	Por	x	AM		960
11	0	471 ²⁵		x	x	x	x	29.2	See below						AM	MisL	808	
12	0	y		x	x	x	x	(31.9)	Upper gas sand	Pen	358	263	S	Por	x	AM		
13	0	y		x	x	x	x	(30.1)	Lower gas sand	Pen	426	309	S	Por	x	AM		
14	0	y		x	x	x	x	(33.6)	Casey sand	Pen	505	444	S	Por	x	AM		
15	0	122		x	x	x	x	36.8	See below						D	St. Peter	3,411	
16	0	y		x	x	x	x	y	Shallow sands	Pen	411	255	S	Por	x	D		
17	0	y		x	x	x	x	y	Casey sand	Pen	511	449	S	Por	x	D		
18	0	y		x	x	x	x	y	Martinsville	MisL	506	477	L	Por	x	D		
19	0	y		x	x	x	x	(33.9)	Carper	MisL	1,418	1,340	S	Por	x	D		
20	0	y		x	x	x	x	y	"Niagaran"	Dev	1,596	1,553	L	Por	x	D		
21	0	1		x	x	x	x	(39.6)	Trenton	Ord	2,830	2,708	L	Por	x	D		
22	0	448		x	x	x	x	31.0	See below						AM	Mis	965	
23	0	y		x	x	x	x	y	Claypool sand	Pen	486	416	S	Por	x	AM		
24	0	y		x	x	x	x	y	Shallow sands	Pen	451	314	S	Por	x	AM		
25	0	y		x	x	x	x	y	Casey sand	Pen	508	465	S	Por	x	AM		
26	0	y		x	x	x	x	y	Upper Partlow	Pen	554	534	S	Por	x	AM		
27	0	456		x	x	x	x	32.2	See below						AM	Mis	1,160	
28	0	y		x	x	x	x	y	Claypool sand	Pen	549	392	S	Por	x	AM		
29	0	y		x	x	x	x	y	Casey sand	Pen	518	453	S	Por	x	AM		
30	0	y		x	x	x	x	y	Upper Partlow	Pen	570	489	S	Por	x	AM		
31	0	y		x	x	x	x	28.5	Lower Partlow	Pen	618	598	S	Por	x	AM		
32	0	403		x	x	x	x	33.7	See below						AM	MisL	1,471	
33	0	y		x	x	x	x	(32.4)	"500 Ft." sand	Pen	726	561	S	Por	x	AM		
34	0	y		x	x	x	x	y	"800 Ft." sand	Pen	907	817	S	Por	x	AM		
35	0	y		x	x	x	x	(37.0)	"900 Ft." sand	MisU	920	886	S	Por	x	AM		
36	0	3,234 ²⁶		x	x	x	x	33.0						33±				
37	0	5,193 ²⁷		425±	y	y	y	33.0	See below ³²						Trenton (Ord)	4,620		
38	0	y		x	x	x	x	y	Shallow sand	Pen	822	508	S	Por	x	ML	Trenton (Ord)	4,620
39	0	y		x	x	x	x	32.8	Robinson sand	Pen	960	900	S	Por	25±	ML	Trenton (Ord)	4,620
40	0	y		x	x	x	x	y	Oblong	Mis	1,416	1,337	S or L	Por	x	A, ML	Mis	1,479

²² Pressures in the southeastern Illinois oil fields are estimated bottom-hole pressures reported in previous Survey publications.

²³ All gravities given prior to 1936 (except those in parentheses) were from data for the year 1925 furnished by the Illinois Pipe Line Co. Gravities in parentheses are for particular samples; see Illinois State Geol. Survey Bull. 54, Table 3. The values have been converted from Baumé to A.P.I. gravities.

²⁴ Air, 7.

²⁵ Gas, 1; air, 15.

²⁶ Gas, 1; air-gas, 5; air, 24.

²⁷ Gas, 16; air-gas, 20; air, 54.

²⁸ Gas, 16; air-gas, 20; air, 54; water, 1.

²⁹ The Salvage Oil and Gas Co.—W. S. McGrillis No. 3, sec. 25, T. 8 N., R. 13 W., is producing in the "McClosky sand" at a depth of from 1409 to 1415 ft.

TABLE 1.—(Continued)

Line Number	Field, County	Age, Years to End of 1938	Area Proved, Acres		Total Oil Production, Bbl.		Total Gas Production, Millions Cu. Ft.		Number of Oil and/or Gas Wells				
			Oil	Gas ^a	To End of 1938	During 1938	To End of 1938	During 1938	Completed to End of 1938		Completed	Abandoned	
									Completed	Abandoned			
41	New Hebron, Crawford...	29	1,350	210	x	x	x	x	296	0	2	178	0
42	Chapman, Crawford....	24	1,045	515	x	x	x	x	193	0	3	72	0
43	Parker, Crawford.....	31	1,310	30	x	x	x	x	256	0	1	216	0
44	Allison-Weger, Crawford...	y	1,075	20	x	x	x	x	146	0	0	65	0
45	Flat Rock, ³ Crawford....	y	1,375	545	x	x	x	x	289	3	7	149	0
46	Birds, Crawford, Lawrence...	y	4,370	115	x	x	x	x	684	0	1	474	0
47	Crawford County Division ⁴		45,655	1,945	143,619,000	1,597,000	x	y	9,193	6	52	6,347	0
48	Lawrence, Lawrence, Crawford.....	32	24,150	1,550	x	x	x	x	4,399	11	27	3,200	0
49			5,015	35	x	x	x	x	1,231	0	y	y	0
50			2,240	0	x	x	x	x	475	0	y	y	0
51			345	1,095	x	x	x	x	243	0	y	y	0
52			15,960	220	x	x	x	x	3,017	0	y	y	0
53			4,020	200	x	x	x	x	684	0	y	y	0
54			6,950	0	x	x	x	x	957	0	y	y	0
55	St. Francisville, Lawrence, Lawrence County Division ⁵	y	420	0	x	x	x	x	54	0	y	45	0
56			24,570	1,550	223,132,000	1,751,000	x	y	9,185	11	27	3,245	0
57	Allendale, Wabash.....	26	1,680	0	4,656,000	384,000	x	y	427	7	3	326	0
58	Total Southeastern Illinois field ⁶		91,855	3,970	423,541,030	3,925,630	x	y	19,064	29	126	13,152	0
59	Colmar-Plymouth, Hancock, McDonough.....	25	2,450	0	2,415,970	128,170	0	0	477	2	0	209	0
60	Pike County Gas, Pike.....	33 ⁷	0	8,960	0	0	x	0	68	0	0	0	0
61	Jacksonville Gas, Morgan.....	28 ⁸	30	1,290	2,100	0	x	0	53	0	y	0	0
62	Carlinville, Macoupin....	29 ⁹	30	50	x	0	x	0	8	0	0	0	0
63	Spanish Needle Creek, Macoupin.....	23 ¹⁰	0	80	0	0	0	14.4	0	7	0	y	0
64	Gillespie-Wyen, Macoupin.....	23	40	0	x	0	0	0	22	0	0	0	0
65	Gillespie-Bend Gas, Macoupin.....	15 ¹¹	0	80	0	0	0	135.8	0	4	0	0	0
66	Staunton Gas, Macoupin.....	22 ¹²	0	400	0	0	0	1,050	0	18	0	0	0
67	Litchfield, Montgomery.....	59 ¹³	100	0	22,000	0	x	0	17	0	0	0	0
68	Collinsville, Madison.....	29 ¹⁴	40	0	715	0	0	0	5	0	0	0	0
69	Ayers Gas, Bond.....	16	0	325	0	0	0	167	23.2	19	1	0	0
70	Greenville Gas, Bond.....	28 ¹⁵	0	160	0	0	0	990	0	4	0	0	0
71	Carlyle, Clinton.....	27	915	0	3,344,400	27,200	0	0	165	0	0	78	0
72	Frogtown, Clinton.....	20 ¹⁶	300	0	x	0	0	0	12	0	0	0	0
73	Sandoval, Marion.....	29	770	0	2,645,800	15,000	0	0	123	0	0	37	0
74	Centralia, Marion.....	28	175	0	x	y	0	0	22	0	0	3	0

³ Includes Swearingen gas.⁴ Total of lines 37, 41, 42, 43, 44, 45, 46.⁵ Total of lines 48 and 55.⁶ Total of lines 36, 47, 56, 57.⁷ Abandoned 1930.⁸ Abandoned 1937.⁹ Abandoned 1925±.¹⁰ Abandoned 1934.¹¹ Abandoned 1935.¹² Abandoned 1919.¹³ Abandoned 1904.¹⁴ Abandoned 1921.¹⁵ Abandoned 1923.¹⁶ Abandoned 1933.

NATURAL GAS

Natural gas was produced commercially in two fields in Illinois during 1938, the Ayers field, Bond County (productive since 1922), and the Russellville field, Lawrence County.

TABLE 1.—(Continued)

Line Number	Oil-production Methods at End of 1938			Pressure, Lb. per Sq. In. ^{d22}	Character of Oil, Approx. Average during 1938	Producing Formation								Deepest Zone Tested to End of 1938			
	Number of Wells					Average at End of	Gravity A.P.I. at 60° F. ²³	Name	Age ^a	Depth, Average in Feet		Porosity ^b	Net Thickness, Average in Feet				
	Flowing	Pumping	Air Gas, Water Lift			Initial	1937			Bottoms of Productive Wells	To Top of Productive Zone						
41	0	178	x	x	x	30.1		Robinson sand ³³	Pen	975	940	S	Por	x	ML	MisL	2,056
42	0	72	x	x	x	y		Robinson sand	Pen	1,015	995	S	Por	x	ML	Mis	2,279
43	0	216	x	x	x	y		Robinson sand	Pen	1,025	1,000	S	Por	x	ML	Pen?	1,127
44	0	65	x	x	x	26.5		Robinson sand	Pen	930	912	S	Por	x	ML	Pen	1,041
45	0	149	x	x	x	22.5		Robinson (Flat Rock)	Pen	945	935	S	Por	x	ML	Pen	1,032
46	0	474	x	x	x	31.8		Robinson sand	Pen	950	930	S	Por	x	ML	MisL	1,731
47	0	6,347 ²⁰	425±	x	x	32.3		Robinson sand	Pen, Mis			S	Por	x	ML	Trenton (Ord)	4,620
48	0	3,200	650±	x	x	32.9		See below						A	St. Peter		5,190
49	0	y	x	x	x	y		Bridgeport sand	Pen	1,000	800	S	Por	40	A		
50	0	y	x	x	x	y		Buchanan "Gas" sand	Pen	1,265	1,250	S	Por	15	A		
51	0	y	x	x	x	y		Buchanan "Gas" sand	MisU	1,345	1,330	S	Por	15	A		
52	0	y	600±	x	x	y		Kirkwood	MisU	1,430	1,400	S	Por	30	A		
53	0	y	650	x	x	y		Tracey	MisU	1,580	1,560	S	Por	20	A		
54	0	y	x	x	x	y		McClosky	MisL	1,710	1,700	L	Por	10	A		
55	0	45	600	x	x	37.3		Kirkwood	MisU	1,865	1,843	S	Por	22	ML	Mis	1,900
56	0	3,245	x	x	x	x								St. Peter		5,190	
57	0	326	x	x	x	35.1		Biehl sand	Pen	1,460	1,425	S	Por	20	AM		
58	0	13,152 ²⁰	x	x	x	33.1											
59	0	209	x	x	x	y		Hoing sand	Dev	468	447	S	Por	21	A	Trenton (Ord)	805
60	0	0	x	x	x	x		"Niagara" Gas sand	Sil	275	265	L	Por	10	A	St. Peter	893
61	0	0	x	x	x	x		"Niagara" Gas sand	Pen, Mis	335	330	S	Por	5	ML	Trenton (Ord)	1,390
62	0	0	135	x	x	27.7		Unnamed	Pen	398	380	S	Por	x	A	Pen	410
63	0	0	y	y	y	y		Unnamed	Pen	405	305	S	Por	x	D	Pen	495
64	0	0	x	x	x	x		Unnamed	Pen	670	650	S	Por	x	T	Trenton (Ord)	2,560
65	0	0	155	x	x			Unnamed	Pen	555	542	S	Por	x	A	Pen	575
66	0	0	145	x	x			Unnamed	Pen	491	461	S	Por	x	A	Trenton (Ord)	2,371
67	0	0	x	x	x	21.7		Unnamed	Pen	674	664	S	Por	x	D	Pen	681
68	0	0	x	x	x	x		Devonian-Silurian	Dev	1,400	1,305	L	Por	20	ML	Silurian	1,500
69	0	0	335	310	310			Lindley (2d)	MisU	945	940	S	Por	5	A	MisL	1,150
70	0	0	x	x	x			Lindley (1st, 2d)	MisU	993	927	S	Por	x	A	Mis	1,065
71	0	78	x	x	x	35.2		Carlyle	MisU	1,055	1,035	S	Por	20	A	Sil	2,620
72	0	0	x	x	x	31.9		Carlyle	MisU	957	950	S	Por	7	0	Carlyle y	962±
73	0	37	x	x	x	34.5		Benoist	MisU	1,560	1,540	S	Por	20±	D	Mis	1,732
74	0	3	x	x	x	32.0		Dykstra, Wilson, Benoit	Pen	1,150	1,130	S	Por	20	D	MisL	1,779
									MisU					ML			

²² Gas, 17; air-gas, 24; air, 53; water, 1.²³ Gas, 18; air-gas, 29; air, 79; water, 7.³³ The West Union Oil and Gas Co.—Ducommon No. 1, sec. 28, T. 6 N., R. 12 W., is producing in the "McClosky sand," from 1506 to 1528 ft.

TABLE 1.—(Continued)

Line Number	Field, County	Area Proved, Acres		Total Oil Production, Bbl.		Total Gas Production, Millions Cu. Ft.		Number of Oil and/or Gas Wells					
		Age, Years to End of 1938	Oil	Gas ^a	To End of 1938	During 1938	To End of 1938	During 1938	Completed to End of 1938	During 1938	At End of 1938		
									Completed	Abandoned	Producing Oils	Producing Gas ^a	
75	Wamac, Clinton, Marion, Washington.....	17	250	0	382,530	9,780	0	0	104	1	0	46	0
76	Dupo, St. Clair.....	10	670	0	946,870	36,100	0	0	242	5	0	30	0
77	Waterloo, Monroe.....	18 ¹⁷	125	0	166,000	0	0	0	23	0	0	0	0
78	Sparta Gas, Randolph.....	21 ¹⁸	65	100	x	0	x	0	20	0	0	0	0
79	Ava-Campbell Hill, Jackson.....	21 ¹⁹	70	370	25,000	0	x	0	35	0	0	0	0
80	Bartelso, Clinton.....	3	165	0	253,570	161,870	0	0	38	17	0	37	0
81	Decatur, Macon.....	22 ²⁰	10	0	1,000	400	0	0	2	0	0	0	0
82	Total for fields prior to 1-1-37 ²¹		98,060	15,785	433,746,980	4,304,150	2,357.2	23.2	20,550	55	126	13,592	10
83	Sorento, Bond.....	1	10	0	y	y	0	0	1	1	0	0	0
84	Beecher City-Louden, Fayette.....	2	15,860	0	1,892,000	1,892,000	0	0	488	486	0	488	0
85			y	0	y	y	0	0	250	248	0	250	0
86			y	0	y	y	0	0	18	18	0	18	0
87			y	0	y	y	0	0	220	220	0	220	0
88	St. James, Fayette.....	1	270	0	48,000	48,000	0	0	24	24	0	24	0
89	Patoka, Marion.....	2	465	0	1,167,000	742,000	0	0	115	22	11	104	0
90	Lake Centralia-Salem, Marion.....	1	7,520	0	2,895,000	2,895,000	0	0	480	480	0	476	0
91			y	0	y	y	0	0	442	442	0	y	0
92			y	0	y	y	0	0	21	21	0	y	0
93			y	0	y	y	0	0	17	17	0	y	0
94	Centralia (New), Clinton, Marion.....	2	2,000	0	3,027,000	3,022,000	0	0	526	524	0	526	0
95			y	0	y	y	0	0	12	12	0	12	0
96			y	0	y	y	0	0	514	512	0	512	0
97	Dix, Jefferson.....	1	615	0	y	y	0	0	35	35	0	35	0
98	Roaches, Jefferson.....	1	20	0	y	y	0	0	2	2	0	2	0
99	Marcoe, Jefferson.....	1	10	0	y	y	0	0	1	1	0	1	0
100	Elli Prairie, Jefferson.....	1	10	0	y	y	0	0	1	1	0	1	0
101	Ina, Jefferson.....	1	10	0	y	y	0	0	1	1	0	1	0
102	Flora, Clay.....	1	140	0	68,000	68,000	0	0	9	9	0	9	0
103	Clay City, Clay, Wayne.....	2	4,750	0	5,560,000	4,004,000	0	0	222	144	0	222	0
104	Noble, Richland.....	2	3,150	0	5,179,000	4,232,000	0	0	153	108	8	141	0
105			y	0	y	y	0	0	6	6	0	6	0
106			3,150	0	y	y	0	0	145	102	8	135	0
107	Schnell, Richland.....	1	40	0	y	y	0	0	4	4	0	4	0
108	Olney, Richland.....	2	380	0	415,000	414,000	0	0	30	29	0	28	1
109	Rinard, Wayne.....	2	10	0	y	y	0	0	1	0	0	1	0
110	Cisne, Wayne.....	2	575	0	y	y	0	0	26	23	0	25	0
111			20	0	y	y	0	0	2	0	0	2	0
112			555	0	y	y	0	0	24	22	0	23	0
113	Boyleston, Wayne.....	1	10	0	y	y	0	0	1	1	0	1	0
114	Aden, Wayne.....	1	160	0	y	y	0	0	4	4	0	4	0
115	North Aden, Wayne.....	1	690	0	305,000	305,000	0	0	40	40	0	40	0
116	Mt. Erie, Wayne.....	1	10	0	y	y	0	0	1	1	0	1	0
117	Leech Twp., Wayne.....	1	20	0	y	y	0	0	2	2	0	2	0
118	Russellville Gas, Lawrence.....	2	0	500	0	0	101.4	99.1	15	13	0	0	15
119	North.....		0	20	0	0	6.8	4.5	2	0	0	0	2
120	South.....		0	450	0	0	94.6	94.6	13	13	0	0	13
121	Total for fields after Jan. 1, 1937 ²²		36,725	500	22,549,000	19,665,000	101.4	99.1	2,182	1,955	19	2,136	15
122	Total for Illinois ²³		134,785	16,285	456,850,000 ²⁴	23,929,000 ²⁴	2,458.6	122.3	22,732	2,010	145	15,728	25

¹⁷ Abandoned 1930.¹⁸ Abandoned 1900.¹⁹ Abandoned 1934.²⁰ Wells drilled in 1922 and 1924, first production in 1937.²¹ Total of lines 58 to 81 inclusive.²² Gas, 5.²³ Total of lines 83 to 120 inclusive.²⁴ Total of lines 82 and 121.

TABLE 1.—(Continued)

Line Number	Oil-production Methods at End of 1938	Pressure, Lb. per Sq. In.	Character of Oil, Approx. Average during 1938	Producing Formation												Deepest Zone Tested to End of 1938		
				Number of Wells		Average at End of		Gravity A.P.I. at 60° F. ²³	Name	Age ^a	Depth, Average in Feet		Porosity ^b		Net Thickness, Average in Feet			
				Flowing	Pumping	Air, Gas, Water Lift	Initial				Bottoms of Productive Wells	To Top of Productive Zone	Character ^c	Por	20	D		
75	0	46		x	x	x	x	30.2	Petro	Pen	760	720	S	Por	20	D	MisL	1,760
76	0	30		x	x	x	x	32.7	Trenton	Ord	651	601	L	Por	50	A	Trenton (Ord)	819
77	0	0		x	x	x	x	30.0	Trenton	Ord	460	410	L	Cav	50	A	Trenton (Ord)	845
78	0	0		x	x	x	x		Sparta gas sand	MisU	857	850	S	Por	7	D	MisU	985
79	0	0		x	x	x	x		Unnamed	MisU	798	780	S	Por	18	A	Dev	2,530
80	0	37		x	x	x	x	32.0	Carlyle	MisU	1,008	984	S	Por	24	D	MisU	1,118
81	0	2		x	x	x	x	39.5	"Niagaran"	Dev	2,076	2,020	L	Por	30	N	St. Peter	2,991
82	0	13,592	³¹	0														
83	0	0		y	0	y	y		Devonian	Dev	1,830	1,800	L	Por	y	D	Devonian	1,830
84	135	353	³⁴	y	y	y	y	37	See below								Devonian	3,170
85	y	y		y	y	y	e500	y	Cypress	MisU	1,541	1,510	S	Por	29			
86	y	y		y	0	y	y		Stray	MisU	1,561	1,542	S	Por	15			
87	y	y		y	0	y	e575	y	Bethel	MisU	1,566	1,542	S	Por	21			
88	0	24		y	y	y	y	37	Cypress	MisU	1,624	1,603	S	Por	19	A	MisU	1,636
89	0	104		x	x	x	x	39.5	Bethel	MisU	1,440	1,424	S	Por	16	A	MisL	1,675
90	127	349		y	y	y	y	39.5									2,192	
91	y	y		y	y	y	y		Bethel	MisU	1,817	1,776	S	Por	38			
92	y	y		y	y	y	y		Aux Vases	MisU	1,850	1,801	S	Por	34			
93	y	y		y	y	y	y		McClosky	MisL	2,033	2,000	L	Por	19			
94	0	526		y	y	{ e250	36.1									A	MisL	1,646
95	0	12		y	y	y	y		Cypress	MisU	1,225	1,200	S	Por	19			
96	0	514		y	y	y	y		Bethel	MisU	1,378	1,355	S	Por	23			
97	0	35		y	y	e730	38		Bethel	MisU	1,963	1,950	S	Por	15	A	Devonian	3,874
98	0	2		y	y	y	y		Ste. Genevieve	MisL	2,271	2,192	S, L	Por	12	D?	MisL	2,263
99	0	1		y	y	y	y		McClosky	MisL	2,765	2,746	L	Por	11	D?	MisL	2,800
100	0	1		y	y	y	y		McClosky	MisL	2,751	2,718	L	Por	7	D?	MisL	2,958
101	0	1		y	y	y	y		St. Louis	MisL	3,007	3,002	L	Por	5	D	MisL	3,007
102	0	9		y	y	y	y	38.5	McClosky	MisL	2,982	2,966	L	Por	7	y	MisL	3,100
103	28	194		y	y	y	y	38.5	McClosky	MisL	3,033	2,984	L	Por	9	A	MisL	3,197
104	0	141		y	y	y	y	38.5								A	MisL	3,115
105	0	6		y	y	y	y	38.5	Cypress	MisU	2,602	2,569	S	Por	20			
106	0	135		y	y	y	y	38.5	McClosky	MisL	3,003	2,957	L	Por	10			
107	0	4		y	y	y	y	38.5	McClosky	MisL	3,068	3,012	L	Por	6	D	MisL	3,130
108	2	26		y	y	350	39.1		McClosky	MisL	3,073	3,052	L	Por	9	A	MisL	3,137
109	0	1		y	y	y	y	38.5	McClosky	MisL	3,154	3,144	L	Por	5	D	MisL	3,154
110	17	8		y	y	y	y	38.5								A	MisL	3,273
111	0	2		y	y	y	y	38.5	Aux Vases	MisU	3,026	2,982	S	Por	13			
112	17	6		y	y	y	y	38.5	McClosky	MisL	3,137	3,117	L	Por	10			
113	0	1		y	y	y	y	38.5	McClosky	MisL	3,269	3,253	L	Por	12	A?	MisL	3,269
114	0	4		y	y	y	y	38.5	McClosky	MisL	3,337	3,287	L	Por	7	A	MisL	3,460
115	34	6		y	y	400	38.5		McClosky	MisL	3,335	3,315	L	Por	13	A	MisL	3,440
116	0	1		y	y	y	y	38.5	McClosky	MisL	3,092	3,080	L	Por	y	D?	MisL	3,135
117	0	2		y	y	y	y	38.5	McClosky	MisL	3,461	3,446	L	Por	7	D?	MisL	3,438
118				y	y	380									A			
119				y	y	y	y		Pen sand	Pen	622	619	S	Por	12		MisL	2,012
120				y	y	y	y		Buchanan	Pen	1,100	1,090	S	Por	10		Pen	1,158
121	343	1,793	³⁴															
122	343	15,385	³⁵															

³¹ Gas, 18; air-gas, 29; air, 171; water, 28.³⁵ Gas, 23; air-gas, 29; air, 171; water, 28.

TABLE 2.—*Summary of Drilling Operations in Illinois*

Important Wildcats Drilled in 1938*

County	Location			Total Depth, Ft.	Deepest Horizon Tested	Drilled by	Initial Production per Day		Field Name of New Discoveries and Extensions
	Sec. Survey	Twp. Lat.	Rge. Long.				Oil, U.S. Bbl.	Gas, Millions Cu. Ft.	
1 Bond.....	30	4 N	2 W	1,385	Ste. Genevieve	W. C. McBride, Inc.			Dry
2 Bond.....	30	6 N	3 W	1,030	Ste. Genevieve	O. M. Nethery			Dry
3 Bond.....	26	6 N	2 W	3,350	"Trenton"	A. T. Whitehead			Dry
4 Bond.....	24	6 N	4 W	2,045	Devonian	Universal and DeMayo			Dry
5 Bond.....	21	6 N	4 W	1,870	"Niagaran"	File et al.			Dry
6 Bond.....	24	4 N	2 W	1,380	Bethel	Leavitt & Holland			Dry
7 Bond.....	31	4 N	2 W	1,323	Ste. Genevieve	Lindsay Bros.			Dry
8 Bond.....	28	4 N	4 W	1,337	St. Louis	John Farrell			Dry
9 Bond.....	33	4 N	4 W	1,130	St. Louis	Lindsey Bros. & Brit. Am.			Dry
10 Bond.....	21	6 N	4 W	1,835	"Niagaran"	DeMayo et al.	15		Sorento
11 Brown.....	4	1 S	2 W	573	Mississippian	Fell Oil Trust			Dry
12 Brown.....	15	1 S	2 W	642	"Niagaran"	Fell Oil Trust			Dry
13 Bureau....	8	17 N	6 E	1,347	St. Peter	Harrington Bros.			Dry
14 Bureau....	24	15 N	9 E	450	Pennsylvanian	John R. Lewis et al.			Dry
15 Cass.....	30	17 N	12 W	585	"Niagaran"	Ed Duval			Dry
16 Champaign...	9	17 N	10 E	350	Pennsylvanian	Casey-Edwards Oil Co.	1.5 ¹		Dry
17 Champaign...	33	18 N	10 E	480	L. Mississippian	Nedra Oil & Gas Co.			Dry
18 Champaign...	20	20 N	8 E	610	Devonian	Barber & Siever			Dry
19 Christian....	23	11 N	1 E	1,727	Ste. Genevieve	Independent Prod. & Ref.			Dry
20 Christian....	23	11 N	1 E	1,801	St. Louis	Swords & McDougal			Dry
21 Christian....	32	12 N	1 W	1,457	Ste. Genevieve	Brown & Lacy			Dry
22 Christian....	29	12 N	2 W	1,010	L. Chester	Nokomis Oil Co.			Dry
23 Clark.....	17	10 N	11 W	2,555	Devonian	Pierson & Yeager			Dry
24 Clark.....	21	11 N	12 W	2,451	"Niagaran"	Nat'l Consumers Oil Co.			Dry
25 Clark.....	30	12 N	13 W	403	Pennsylvanian	Stipes et al.	0.250 ¹		Dry
26 Clark.....	19	12 N	14 W	410	B. Pennsylvanian	W. R. Miller et al.			Dry
27 Clark.....	29	12 N	13 W	525	L. Pennsylvanian	J. W. Stipes et al.			Dry
28 Clark.....	17	11 N	12 W	2,440	"Niagaran"	Mid-American Resource Co.			Dry
29 Clay.....	19	3 N	8 E	3,047	"McClosky"	Danville Oil Drillers, Inc.	124		Clay City extension
30 Clay.....	12	2 N	7 E	3,076	Ste. Genevieve	Wiser Oil Co.	273		Clay City extension
31 Clay.....	23	3 N	7 E	3,147	Ste. Genevieve	J. L. Tallman et al.			Dry
32 Clay.....	19	3 N	8 E	3,098	Ste. Genevieve	Nu Crude Oil Co.			Dry
33 Clay.....	13	3 N	6 E	2,983	Ste. Genevieve	Kingwood Oil Co.	550		Flora
34 Clay.....	24	4 N	8 E	3,150	Ste. Genevieve	Ohio Oil Co.			Dry
35 Clay.....	14	4 N	5 E	4,325	"Niagaran"	Carter Oil Co.			Dry
36 Clay.....	35	3 N	8 E	3,074	Ste. Genevieve	Eureka Oil Co.			Dry
37 Clay.....	9	3 N	7 E	2,967	Ste. Genevieve	Ohio Oil Co.	459		Flora extension
38 Clay.....	32	3 N	5 E	3,030	Ste. Genevieve	Gordin & Robinson			Dry
39 Clinton....	18	3 N	2 W	1,188	Bethel	Hawley & Willis			Dry
40 Clinton....	4	3 N	2 W	1,406	L. Mississippian	Phelps et al.			Dry
41 Clinton....	13	1 N	1 W	1,370	Bethel	Adams Oil & Gas Co.	275		Centralia (New extension)
42 Clinton....	13	1 N	1 W	1,444	Bethel	Paul Henshaw Gross, Erling & Murphy			Dry
43 Clinton....	22	1 N	4 W	1,030	L. Chester	Hawley & Willis			Dry
44 Clinton....	18	3 N	2 W	1,454	Ste. Genevieve	Brookside Oil Co.			Dry
45 Clinton....	21	1 N	1 W	1,420	Bethel	Sigel & Schlossberg			Dry
46 Clinton....	4	2 N	1 W	1,733	Ste. Genevieve	Penn.-Ill. Oil Co.			Dry
47 Clinton....	28	2 N	1 W	1,750	L. Mississippian	Kennedy & Plan-			Dry
48 Clinton....	3	2 N	5 W	1,352	Salem	gle			Dry
49 Clinton....	16	1 N	2 W	1,509	Ste. Genevieve	F. L. Heldt			Dry

* One mile or more from production.

¹ Gas well for local use.

TABLE 2.—(Continued)

Important Wildcats Drilled in 1938

County	Location				Total Depth, Ft.	Deepest Horizon Tested	Drilled by	Initial Production per Day		Field Name of New Discoveries and Extensions
	Sec. Survey	Twp. Lat.	Rge. Long.	Total Depth, Ft.				Oil, U. S. Bbl.	Gas, Millions Cu. Ft.	
50 Clinton.....	35	2 N	2 W	1,370	Bethel		R. A. Wilson et al.			Dry
51 Clinton.....	14	2 N	1 W	1,795	Ste. Genevieve		Trahan et al.			Dry
52 Clinton.....	23	2 N	2 W	1,560	Ste. Genevieve		Hausman et al.			Dry
53 Clinton.....	5	3 N	1 W	1,620	Ste. Genevieve		Taylor Drilling Co.			Dry
54 Clinton.....	10	3 N	2 W	1,276	Bethel		M & K Oil Co.			Dry
55 Clinton.....	30	1 N	4 W	1,403	L. Mississippian		Farrelly et al.			Dry
56 Clinton.....	35	1 N	5 W	1,290	St. Louis		Martin et al.			Dry
57 Clinton.....	19	3 N	2 W	1,183	Bethel		White et al.			Dry
58 Clinton.....	22	3 N	2 W	1,150	Bethel		Sappington et al.			Dry
59 Clinton.....	7	1 N	2 W	1,498	St. Louis		Phillips Petroleum Co.			Dry
60 Clinton.....	24	1 N	3 W	1,360	Bethel		Watkins & Wright			Dry
61 Clinton.....	21	2 N	3 W	1,355	Ste. Genevieve		A. C. Thomas et al.			Dry
62 Clinton.....	35	2 N	3 W	1,370	Ste. Genevieve		Pass et al.			Dry
63 Clinton.....	10	3 N	1 W	1,529	Bethel		G. N. Moore			Dry
64 Clinton.....	28	3 N	2 W	1,389	Ste. Genevieve		Lou Huddleston et al.			Dry
65 Coles.....	31	14 N	14 W	1,203	Silurian		Gregory & Mechling			Dry
66 Coles.....	27	13 N	9 E	903	L. Mississippian		W. E. Hughes			Dry
67 Coles.....	21	11 N	10 E	3,532	"Trenton"		Kingwood Oil Co.			Dry
68 Coles.....	21	11 N	7 E	2,286	Ste. Genevieve		B. Wafford et al.			Dry
69 Coles.....	9	12 N	7 E	2,277	St. Louis		Thompson Drilling Co.			Dry
70 Coles.....	30	14 N	14 W	1,134	"Niagaran"		Mabey et al.			Dry
71 Coles.....	27	13 N	8 E	2,105	Bethel		Ed Swearer & Crown Petr. Co.			Dry
72 Coles.....	36	14 N	10 E	1,300	Devonian-Silurian		East Oakland Syndicate			Dry
73 Crawford....	34	8 N	12 W	1,030	Basal Pennsylvanian		Darnell et al.			Dry
74 Crawford....	18	5 N	10 W	955	Basal Pennsylvanian		Kentucky Natural Gas Co.			Dry
75 Crawford....	24	6 N	12 W	1,027	Basal Pennsylvanian		Dill-Thalman et al.			Dry
76 Crawford....	19	5 N	10 W	1,450	Ste. Genevieve		Kentucky Natural Gas Corp.			Dry
77 Crawford....	6	6 N	11 W	1,621	Ste. Genevieve		Mahutska Oil Co.			Dry
78 Crawford....	18	8 N	12 W	2,952	Devonian		Warren Hastings			Dry
79 Cumberland..	30	10 N	9 E	2,330	L. Chester		Stipes et al.			Dry
80 Cumberland..	26	9 N	9 E	2,825	Fredonia		Stewart Oil Co.			Dry
81 Cumberland..	27	11 N	8 E	2,411	St. Louis		Phillips Petroleum Co.			Dry
82 Cumberland..	18	10 N	7 E	2,301	Ste. Genevieve		Hanshaw Bros.			Dry
83 Cumberland..	29	10 N	9 E	2,680	Ste. Genevieve		Jefferies & Cobb			Dry
84 Edgar.....	22	13 N	12 W	2,314	"Niagaran"		Sun Oil Co.			Dry
85 Edgar.....	18	12 N	13 W	1,000	L. Mississippian		J. W. Stipes et al.			Dry
86 Edgar.....	15	14 N	11 W	2,160	"Niagaran"		J. M. Huber Corp.			Dry
87 Edgar.....	16	14 N	13 W	670	L. Mississippian		Elmer Lapsley			Dry
88 Edgar.....	24	14 N	14 W	544	L. Mississippian		Pearcy			Dry
89 Effingham....	32	8 N	6 E	2,709	L. Mississippian		Hollis et al.			Dry
90 Effingham....	18	6 N	7 E	2,900	St. Louis		Graham & Duncan			Dry
91 Effingham....	15	6 N	6 E	5,823	Middle Ordovician		Kingwood Oil Co.			Dry
92 Effingham....	24	8 N	4 E	2,700	L. Mississippian		Penn.-Ill. Oil & Gas Co.			Dry
93 Effingham....	22	7 N	4 E	2,404	Ste. Genevieve		Kingwood & Baker			Dry
94 Effingham....	20	9 N	4 E	2,012	Ste. Genevieve		Carter Oil Co.			Dry
95 Effingham....	27	8 N	4 E	2,036	Basal Chester		W. D. Anderson			Dry
96 Effingham....	31	9 N	4 E	1,656	Bethel		Carter Oil Co.			Dry
97 Fayette.....	24	9 N	1 E	1,850	Ste. Genevieve		Ryan & Redgraves			Dry

TABLE 2.—(Continued)

Important Wildcats Drilled in 1938

County	Location			Total Depth, Ft.	Deepest Horizon Tested	Drilled by	Initial Production per Day		Field Name of New Discoveries and Extensions
	Sec. Survey	Twp. Lat.	Rge. Long.				Oil, U. S. Bbl.	Gas, Millions Cu. Ft.	
98 Fayette.....	16	8 N	3 E	1,573	Bethel	Farrelly et al.	35		Beecher City—Louden extension
99 Fayette.....	36	9 N	3 E	1,672	Bethel	Whisenant & Henshaw		Dry	
100 Fayette.....	27	8 N	2 E	1,574	Golconda	Crump, Ritchie & Payne		Dry	
101 Fayette.....	34	9 N	3 E	1,662	Bethel	W. F. Lacy		Dry	
102 Fayette.....	24	7 N	2 E	1,942	Ste. Genevieve	Sharp & Divers		Dry	
103 Fayette.....	2	7 N	2 E	1,665	L. Chester	Sol Simon et al.		Dry	
104 Fayette.....	24	8 N	2 E	1,500	L. Chester	Trares et al.		Dry	
105 Fayette.....	34	5 N	1 W	1,546	Bethel	Wheless & Whisenant		Dry	
106 Fayette.....	19	8 N	3 E	1,757	Bethel	W. C. McBride, Inc.		Dry	
107 Fayette.....	14	4 N	1 W	1,462	Bethel	Wheeler & Whisenant		Dry	
108 Fayette.....	16	5 N	2 E	1,919	Bethel	Finley & Greer		Dry	
109 Fayette.....	10	6 N	3 E	1,912	Bethel	Joe Sharp & J. Divers		Dry	
110 Fayette....	1	7 N	2 E	1,760	Bethel	Pat Hudson		Dry	
111 Fayette....	6	8 N	3 E	1,772	Bethel	Iroquois Oil & Gas Co.		Dry	
112 Fayette.....	20	6 N	3 E	1,810	Bethel	Whisenant et al.		Dry	
113 Fayette.....	30	6 N	3 E	1,622	Cypress	Rosenthal	188		St. James
114 Fayette.....	12	7 N	2 E	1,800	Bethel	Ruwaldt & Johnson		Dry	
115 Fayette.....	3	8 N	1 E	1,822	St. Louis	Phillips Petroleum Corp.		Dry	
116 Fayette.....	4	8 N	3 E	1,690	Cypress	Bell Oil & Gas Co.		Dry	
117 Fayette.....	35	8 N	3 E	1,637	Bethel	DeKalb Syndicate		Dry	
118 Fayette.....	8	5 N	1 E	1,602	Bethel	Burroughs		Dry	
119 Fayette.....	1	5 N	2 E	1,802	Bethel	Longovia et al.		Dry	
120 Fayette.....	25	6 N	2 E	1,820	Bethel	W. B. Johnson		Dry	
121 Fayette.....	5	6 N	3 E	1,753	Aux Vases	Jarvis Bros.		Dry	
122 Fayette.....	12	6 N	3 E	2,201	"McClosky"	J. C. Cole et al.		Dry	
123 Fayette.....	19	6 N	3 E	1,980	"McClosky"	F. H. Brown et al.		Dry	
124 Fayette.....	16	7 N	3 E	1,593	Bethel	Cummings et al.		Dry	
125 Fayette.....	34	9 N	2 E	1,850	Basal Chester	Bob Garland		Dry	
126 Fayette.....	2	6 N	2 E	1,952	Bethel	Zephyr Drilling Co.		Dry	
127 Fayette.....	35	6 N	1 W	1,434	Bethel	Putman et al.		Dry	
128 Fayette.....	32	6 N	3 E	1,832	Bethel	Mammoth Prod. & Ref.		Dry	
129 Fayette.....	30	5 N	1 E	1,580	Bethel	W. C. Stephenson et al.		Dry	
130 Fayette.....	30	7 N	3 E	1,647	Bethel	Whisenant et al.		Dry	
131 Fayette.....	33	7 N	3 E	1,910	Ste. Genevieve	Jarvis Bros.		Dry	
132 Fayette.....	29	8 N	1 E	1,695	Ste. Genevieve	Producers Oil Co.		Dry	
133 Fayette.....	33	8 N	1 E	1,640	Basal Chester	Doran & Haynes		Dry	
134 Fayette.....	30	9 N	1 E	1,775	Ste. Genevieve	Continental Oil Co.		Dry	
135 Fayette.....	36	4 N	1 W	1,702	Ste. Genevieve	Lindsey et al.		Dry	
136 Fayette.....	16	5 N	1 E	1,636	Bethel	American Seismograph Co.		Dry	
137 Fayette.....	8	6 N	3 E	2,001	Ste. Genevieve	Mylius et al.		Dry	
138 Fayette.....	15	6 N	1 W	1,755	L. Mississippian	Hurricane Creek Oil Co.		Dry	
139 Fayette.....	35	6 N	1 W	1,434	Bethel	Putman et al.		Dry	
140 Fayette.....	18	7 N	2 E	1,970	Ste. Genevieve	Papoose Oil Co.		Dry	
141 Fayette.....	31	9 N	3 E	2,200	L. Mississippian	Ullrich & Pough		Dry	
142 Fulton.....	11	7 N	1 E	657	"Niagaran"	Ketcherside & Fisher		Dry	
143 Franklin....	6	5 S	4 E	3,050	L. Mississippian	Washburn Petroleum Co.		Dry	
144 Franklin....	18	5 S	3 E	2,946	St. Louis	Markham, Mason & Redwine		Dry	
145 Franklin....	14	7 S	1 E	3,308	Ste. Genevieve	Amerada Petroleum Co.		Dry	

TABLE 2.—(Continued)

Important Wildcats Drilled in 1938

County	Location			Total Depth, Ft.	Deepest Horizon Tested	Drilled by	Initial Production per Day		Field Name of New Discoveries and Extensions
	Sec. Survey	Twp. Lat.	Rge. Long.				Oil, U.S. Bbl.	Gas, Millions Cu. Ft.	
146 Franklin.....	19	5 S	2 E	3,102	St. Louis	Adams Oil & Gas Co.		Dry	
147 Franklin.....	4	5 S	1 E	3,103	Salem	Buell		Dry	
148 Franklin.....	36	6 S	2 E	3,197	St. Louis	Eason Oil Co.		Dry	
149 Hamilton.....	32	3 S	7 E	3,460	Ste. Genevieve	H. H. Weinert, Inc.		Dry	
150 Hancock.....	1	3 N	5 W	568	Hoing	Callahan et al.		Dry	
151 Hancock.....	11	4 N	5 W	531	Hoing	Forrest Groves		Dry	
152 Hardin.....	30	11 S	8 E	2,345	"Trenton"	Marettta Oil Co.		Dry	
153 Iroquois.....	14	26 N	12 W	1,096	Maquoketa	Whittet et al.		Dry	
154 Jackson.....	20	7 S	4 W	4,144	St. Peter	Standolind Oil & Gas Co.		Dry	
155 Jackson.....	12	7 S	2 W	1,891	"McClosky"	T. T. Eason		Dry	
156 Jackson.....	11	7 S	2 W	2,007	Ste. Genevieve	W. R. Hayes		Dry	
157 Jasper.....	33	6 N	14 W	3,018	Ste. Genevieve	Denver Prod. & Ref. Co.		Dry	
158 Jasper.....	20	8 N	10 E	4,139	Devonian	Hoffman et al.		Dry	
159 Jasper.....	7	6 N	9 E	2,540	Chester	Richard Eke		Dry	
160 Jasper.....	3	6 N	9 E	2,708	Lower Chester	Obermayer et al.		Dry	
161 Jasper.....	33	7 N	9 E	3,210	St. Louis	Continental Oil Co.		Dry	
162 Jasper.....	30	8 N	10 E	2,694	Ste. Genevieve	Borah et al.		Dry	
163 Jefferson.....	10	1 S	2 E	2,000	Bethel	Carter Oil Co.	73	Dix ²	
164 Jefferson.....	23	4 S	3 E	3,150	Ste. Genevieve	Benedum-Trees Oil Co.		Dry	
165 Jefferson.....	15	1 S	1 E	1,959	Bethel	Dee & Jordan		Dry	
166 Jefferson.....	6	2 S	2 E	2,467	L. Mississippian	Sturbois & Tom-berlin		Dry	
167 Jefferson.....	16	2 S	1 E	2,380	St. Louis	Dee et al.		Dry	
168 Jefferson.....	7	1 S	3 E	2,200	Lower Chester	Hausman et al.		Dry	
169 Jefferson.....	6	1 S	1 E	1,840	Cypress	Crosby & Gill		Dry	
170 Jefferson.....	6	1 S	1 E	2,132	Ste. Genevieve	J. O. Gill		Dry	
171 Jefferson.....	4	2 S	2 E	2,552	Ste. Genevieve	Kingwood Oil Co.		Dry	
172 Jefferson.....	5	1 S	2 E	2,010	Cypress	Case, Hanna et al.		Dry	
173 Jefferson.....	20	4 S	3 E	2,911	Fredonia	Dee & Foltz		Dry	
174 Jefferson.....	20	4 S	3 E	2,653	Chester	Dee & Foltz		Dry	
175 Jefferson.....	25	4 S	2 E	3,003	St. Louis	Nollem Oil & Gas Co.	12	Ina	
176 Jefferson.....	1	1 S	1 E	1,840	Bethel	Sam Jennings et al.		Dry	
177 Jefferson.....	6	1 S	1 E	1,163	Pennsylvanian	V. O. Lewis		Dry	
178 Jefferson.....	2	2 S	1 E	2,413	St. Louis	J. G. Buell		Dry	
179 Jefferson.....	5	3 S	4 E	3,167	"McClosky"	J. G. Buell		Dry	
180 Jefferson.....	22	2 S	1 E	2,263	"McClosky"	Magnolia Petroleum Co.	217	Roaches	
181 Jefferson.....	16	2 S	1 E	2,958	"McClosky"	Benedum-Trees Oil Co.	20	Elk Prairie	
182 Jefferson.....	28	1 S	2 E	2,238	Ste. Genevieve	Milam et al.		Dry	
183 Jefferson.....	36	1 S	2 E	2,579	St. Louis	A. S. Walker		Dry	
184 Jefferson.....	18	3 S	4 E	2,808	Ste. Genevieve	Minerva Oil Co.		Dry	
185 Jefferson.....	9	2 S	1 E	2,272	Ste. Genevieve	Transwestern Oil Co.		Dry	
186 Jefferson.....	14	2 S	1 E	2,401	Ste. Genevieve	Luttrell & Holleman		Dry	
187 Jefferson.....	27	2 S	1 E	2,868	Salem	Magnolia Petroleum Co.		Dry	
188 Jefferson.....	28	2 S	1 E	2,264	Ste. Genevieve	Dr. Moore et al.		Dry	
189 Jefferson.....	12	3 S	2 E	2,822	Ste. Genevieve	W. O. Allen et al.		Dry	
190 Jefferson.....	22	3 S	2 E	2,765	"McClosky"	Magnolia Petroleum Co.	237	Marcoe	
191 Jefferson.....	20	4 S	3 E	3,150	St. Louis	Parker-Price		Dry	
192 Lawrence.....	20	4 N	11 W	1,215	Bridgeport	Payne et al.		Dry	
193 Lawrence.....	13	4 N	11 W	1,061	B. Pennsylvanian	Joe Kesl et al.	2,651	South Russellville	
194 Lawrence.....	22	3 N	11 W	2,044	St. Louis	Chester Harris et al.		Dry	
195 Lawrence.....	14	3 N	11 W	2,000	L. Mississippian	Trio Oil Co.		Dry	
196 Lawrence.....	23	4 N	11 W	1,750	L. Mississippian	Joe Kesl et al.		Dry	

²Well drilled to Devonian but plugged back to Bethel sandstone.

TABLE 2.—(Continued)

Important Wildcats Drilled in 1938

County	Location			Total Depth, Ft.	Deepest Horizon Tested	Drilled by	Initial Production per Day		Field Name of New Discoveries and Extensions
	Sec. Survey	Twp. Lat.	Rge. Long.				Oil, U.S. Bbl.	Gas, Millions Cu. Ft.	
197 McDonough..	2	5 N	4 W	820	"Trenton"	Ed Jones et al.			Dry
198 McDonough..	6	4 N	4 W	453	Hoing	W. I. Cole			Dry
199 McDonough..	6	4 N	4 W	510	Hoing	W. I. Cole			Dry
200 McDonough..	15	7 N	3 W	815	"Trenton"	John Mehmken			Dry
201 McDonough..	6	4 N	4 W	511	Hoing	W. I. Cole et al.			Dry
202 Macon.....	30	17 N	2 E	2,992	St. Peter	Sun Oil Co.			Dry
203 Macon.....	3	15 N	2 E	1,085	Chester	Werner Bros.			Dry
204 Macoupin....	15	8 N	8 W	425	Pennsylvanian	American Petroleum Corp.	0.62*		
205 Macoupin....	8	9 N	7 W	448	B. Pennsylvanian	Cross et al.			Dry
206 Macoupin....	21	9 N	8 W	500	L. Mississippian	Erie Drilling Co.			Dry
207 Macoupin....	33	9 N	6 W	617	B. Pennsylvanian	Erie Drilling Co.			Dry
208 Macoupin....	24	8 N	9 W	1,755	"Trenton"	Spence Bros. et al.			Dry
209 Macoupin....	23	9 N	8 W	420	Pennsylvanian	E. McCallum et al.			Dry
210 Macoupin....	15	11 N	8 W	1,828	Trenton	Phillips Petroleum Co.			Dry
211 Madison....	12	4 N	9 W	2,093	St. Peter	Penn-Illinois Oil Co.			Dry
212 Madison....	15	6 N	8 W	1,980	"Trenton"	Marshall Spivey			Dry
213 Madison....	9	4 N	8 W	1,080	L. Mississippian	C & A Development Co.			Dry
214 Madison....	18	4 N	8 W	400	Mississippian	Penn-Ill. Development Co.			Dry
215 Marion.....	35	3 N	4 E	2,765	L. Mississippian	Helmrich and Payne			Dry
216 Marion.....	12	4 N	1 E	1,962	Ste. Genevieve	Schriver et al.			Dry
217 Marion.....	5	3 N	1 E	1,494	B. Chester	Alexander et al.			Dry
218 Marion.....	29	2 N	1 E	2,001	St. Louis	W. C. McBride, Inc.			Dry
219 Marion.....	12	4 N	4 E	2,881	St. Louis	Albachtin and Sims			Dry
220 Marion.....	33	2 N	1 E	2,007	L. Mississippian	W. D. Sheldon et al.			Dry
221 Marion.....	36	4 N	1 E	1,050	B. Pennsylvanian	Hackman and Harris			Dry
222 Marion.....	1	3 N	1 E	1,759	Bethel	Vaughn et al.			Dry
223 Marion.....	7	3 N	1 E	1,514	L. Chester	Adams			Dry
224 Marion.....	27	1 N	1 E	1,950	Bethel	Samuel and Dyke			Dry
225 Marion.....	5	1 N	2 E	1,916	"McClosky"	Texas Company	732		Lake Centralia-Salem field
226 Marion.....	5	3 N	2 E	2,000	Bethel	Max Conrey et al.			Dry
227 Marion.....	24	1 N	1 E	2,200	Ste. Genevieve	A. P. Potter et al.			Dry
228 Marion.....	19	2 N	1 E	2,100	L. Mississippian	Morrison			Dry
229 Marion.....	22	4 N	2 E	2,265	Ste. Genevieve	Penn-Illinois Oil and Gas			Dry
230 Marion.....	18	3 N	3 E	2,230	Bethel	Marion Oil Co.			Dry
231 Marion.....	2	1 N	1 E	2,194	Ste. Genevieve	Harris and Broodus			Dry
232 Marion.....	7	1 N	1 E	1,820	L. Mississippian	J. O. Gill			Dry
233 Marion.....	9	1 N	1 E	1,930	Ste. Genevieve	Parshall-Graham			Dry
234 Marion.....	1	1 N	1 E	1,728	Golconda	Iroquois Oil & Gas Co.			Dry
235 Marion.....	5	1 N	1 E	1,823	Bethel	Ann Bell Oil Co.			Dry
236 Marion.....	8	1 N	1 E	2,045	Ste. Genevieve	Thompson Drilling Co.			Dry
237 Marion.....	25	2 N	1 E	2,018	Bethel	Carpenter & Goldberg			Dry
238 Marion.....	36	2 N	1 E	1,920	Bethel	Boyce & Welch			Dry
239 Marion.....	18	2 N	4 E	2,801	Ste. Genevieve	Bonnie Oil & Gas Co.			Dry
240 Marion.....	2	1 N	1 E	900	Pennsylvanian	Blalack & Gray			Dry
241 Marion.....	3	1 N	1 E	1,632	Cypress	Ann Bell Oil Co.			Dry
242 Marion.....	5	1 N	1 E	837	Pennsylvanian	Cole & Simmel			Dry

* Gas well for local use.

TABLE 2.—(Continued)

Important Wildcats Drilled in 1938

County	Location			Total Depth, Ft.	Deepest Horizon Tested	Drilled by	Initial Production per Day		Field Name of New Discoveries and Extensions			
	Sec. Survey	Twp. Lat.	Rge. Long.				Oil, U.S. Bbl.	Gas, Millions Cu. Ft.				
243 Marion.....	12	1 N	1 E	2,026	Paint Creek	J. L. Gardenhire			Dry			
244 Marion.....	10	1 N	3 E	2,133	Chester	Cattani et al.			Dry			
245 Marion.....	19	1 N	3 E	2,303	L. Chester	R. E. Dalton Oil Co.			Dry			
246 Marion.....	10	2 N	1 E	1,710	L. Chester	Boyce et al.			Dry			
247 Marion.....	11	3 N	2 E	2,331	"McClosky"	Baldwin & Streeter			Dry			
248 Marion.....	23	3 N	2 E	2,453	Ste. Genevieve	Max Pray			Dry			
249 Marion.....	20	4 N	2 E	1,652	L. Chester	Newman et al.			Dry			
250 Marion.....	22	4 N	2 E	1,550	L. Chester	Wigoso Oil & Gas Co.			Dry			
251 Marion.....	12	1 N	1 E	2,315	Bethel	Blair et al.			Dry			
252 Marion.....	30	1 N	2 E	1,835	Golconda	Dalton Oil Development Co.			Dry			
253 Marion.....	15	1 N	4 E	2,680	B. Chester	Richland Corp.			Dry			
254 Marion.....	1	2 N	1 E	2,131	Ste. Genevieve	Mid Valley Steel Co.			Dry			
255 Marion.....	5	2 N	2 E	2,195	Ste. Genevieve	W. S. Tatum			Dry			
256 Marion.....	5	2 N	2 E	2,192	"McClosky"	Garnier Bros.			Dry			
257 Marion.....	6	2 N	4 E	2,850	Ste. Genevieve	Devonian Oil Co.			Dry			
258 Marion.....	24	3 N	3 E	2,560	St. Louis	Transwestern Oil Co.			Dry			
259 Marion.....	24	4 N	2 E	2,005	Bethel	Conrey et al.			Dry			
260 Marion.....	26	4 N	2 E	2,211	"McClosky"	J. J. Broadus			Dry			
261 Marion.....	1	1 N	1 E	2,202	Ste. Genevieve	Dr. Phillips & Ashby			Dry			
262 Marion.....	16	1 N	1 E	1,910	Bethel	Ed Hollmans et al.			Dry			
263 Marion.....	8	2 N	2 E	2,261	Ste. Genevieve	Pyramid Petroleum Corp.			Dry			
264 Marion.....	20	2 N	3 E	2,501	Ste. Genevieve	Bob Garland			Dry			
265 Marion.....	16	3 N	2 E	2,351	Ste. Genevieve	Scroggins et al.			Dry			
266 Menard.....	24	19 N	5 W	1,570	"Niagaran"	Fernwald et al.			Dry			
267 Monroe.....	10	3 S	11 W	730	St. Peter	Bill Casseday			Dry			
268 Montgomery.....	29	8 N	5 W	849	St. Louis	Baker et al.			Dry			
269 Montgomery.....	4	8 N	5 W	821	L. Mississippian	Meyers et al.			Dry			
270 Montgomery.....	29	8 N	5 W	905	Pennsylvanian	Baker & Martin	0.08*		Dry			
271 Montgomery.....	3	8 N	5 W	758	B. Pennsylvanian	Joe Kesl			Dry			
272 Montgomery.....	4	9 N	4 W	1,250	Ste. Genevieve	Swords et al.			Dry			
273 Montgomery.....	10	10 N	1 W	1,610	Bethel	Meyers & Graham			Dry			
274 Montgomery.....	32	8 N	5 W	700	B. Pennsylvanian	Judd & Sons			Dry			
275 Morgan.....	8	15 N	9 W	440	Warsaw	Waverly Oil Syndicate, Ltd.			Dry			
276 Morgan.....	33	14 N	8 W	1,685	Trenton	Alexander Oil Co.			Dry			
277 Morgan.....	25	15 N	9 W	1,590	Trenton	Alexander Oil Co.			Dry			
278 Morgan.....	25	15 N	9 W	450	L. Mississippian	Ralph Neely et al.			Dry			
279 Moultrie.....	18	13 N	6 E	2,005	St. Louis	Continental Oil Co.			Dry			
280 Moultrie.....	22	15 N	6 E	1,866	Bethel	Amerada Petrol. Co.			Dry			
281 Perry.....	10	6 S	3 W	1,643	Ste. Genevieve	Amerada Petrol. Co.			Dry			
282 Perry.....	22	6 S	2 W	1,769	Ste. Genevieve	Eason Oil Co.			Dry			
283 Perry.....	17	6 S	1 W	1,832	St. Louis	L. C. Simmel			Dry			
284 Perry.....	6	5 S	1 W	1,605	Ste. Genevieve	Bert Fields & Rockhill Co.			Dry			
285 Perry.....	27	5 S	1 W	2,636	Ste. Genevieve	Max Pray et al.			Dry			
286 Piatt.....	17	18 N	6 E	3,021	"Trenton"	C. C. Whitlock et al.			Dry			
287 Pope.....	12	11 S	5 E	1,760	Chester	Mabee et al.			Dry			
288 Randolph.....	3	4 S	5 W	3,640	Joachim	Pioneer Oil and Gas Co.			Dry			
289 Randolph.....	28	6 S	6 W	716	L. Mississippian	S. B. Schlosburg			Dry			
290 Randolph.....	4	5 S	6 W	350	Chester				Dry			

* Gas well for local use.

TABLE 2.—(Continued)

Important Wildcats Drilled in 1938

County	Location			Total Depth, Ft.	Deepest Horizon Tested	Drilled by	Initial Production per Day		Field Name of New Discoveries and Extensions
	Sec. Survey	Twp. Lat.	Rge. Long.				Oil, U. S. Bbl.	Gas, Millions Cu. Ft.	
291 Randolph.....	29	4 S	7 W	508	L. Mississippian	Dr. Seward et al.			Dry
292 Randolph.....	12	5 S	9 W	1,910	St. Peter	Ames Drilling Co.			Dry
293 Richland.....	21	3 N	9 E	3,121	"McClosky sand"	Max Pray et al.	139		Noble extension
294 Richland.....	28	3 N	9 E	3,064	Ste. Genevieve	Mammoth Prod. & Refiners	2,192		Noble extension
295 Richland.....	5	3 N	10 E	3,124	Ste. Genevieve	Papoose Oil Co.			Dry
296 Richland.....	2	4 N	10 E	3,158	St. Louis	Gulf Oil Co.			Dry
297 Richland.....	34	4 N	10 E	3,099	Ste. Genevieve	Morrison and German			Dry
298 Richland.....	29	4 N	9 E	3,180	Ste. Genevieve	American Exploration Co.			Dry
299 Richland.....	26	4 N	10 E	3,036	"McClosky"	Pyramid Petrol. Corp.	1,000		Olney
300 Richland.....	23	3 N	9 E	3,080	"McClosky"	American Nat'l Drill. Co.	20		Noble extension
301 Richland.....	7	2 N	9 E	2,984	"McClosky"	J. V. Wicklund	1,053		Schnell
302 Richland.....	26	4 N	9 E	2,929	Cypress	Pure Oil Co.	514		Noble extension
303 Richland.....	21	4 N	10 E	3,208	Ste. Genevieve	Wicklund Development			Dry
304 Richland.....	35	4 N	10 E	3,141	Ste. Genevieve	Kingwood Oil Co.			Dry
305 St. Clair.....	27	1 N	10 W	472	"Trenton"	Pioneer Oil & Gas Co.	100		Dupo extension
306 St. Clair.....	27	1 N	10 W	523	"Trenton"	Pioneer Oil & Gas Co.	65		Dupo extension
307 St. Clair.....	13	2 S	6 W	1,012	Ste. Genevieve	Group Oil Corp.			Dry
308 St. Clair.....	20	2 N	6 W	1,023	St. Louis	Neil et al.			Dry
309 St. Clair.....	31	1 S	7 W	1,234	L. Mississippian	Mossbaugh			Dry
310 St. Clair.....	28	3 S	6 W	895	L. Mississippian	Group Oil Co.			Dry
311 Saline.....	3	10 S	6 E	1,502	L. Chester	W. J. Rodgers et al.			Dry
312 Saline.....	12	8 S	6 E	360	Pennsylvanian	C. F. Bolton			Dry
313 Saline.....	13	9 S	7 E	2,601	L. Mississippian	Bolton et al.			Dry
314 Sangamon.....	24	15 N	7 W	2,257	St. Peter	Walter Wittlinger			Dry
315 Schuyler.....	27	2 N	1 W	850	"Niagaran"	O. D. Arnold et al.			Dry
316 Shelby.....	19	10 N	4 E	2,012	Ste. Genevieve	Whisenant and Henshaw			Dry
317 Shelby.....	4	11 N	3 E	1,951	Ste. Genevieve	Milan et al.			Dry
318 Shelby.....	27	12 N	3 E	1,804	Ste. Genevieve	Cypress Oil & Gas Co.			Dry
319 Shelby.....	25	11 N	2 E	1,886	Ste. Genevieve	Borah et al.			Dry
320 Shelby.....	17	12 N	4 E	2,072	St. Louis	Kingwood Oil Co.			Dry
321 Shelby.....	16	12 N	4 E	1,921	Ste. Genevieve	Simar Oil Co.			Dry
322 Shelby.....	30	12 N	4 E	1,865	Bethel	O. J. Connell			Dry
323 Shelby.....	9	9 N	3 E	2,008	Ste. Genevieve	A. A. Baker			Dry
324 Shelby.....	15	9 N	3 E	1,716	Bethel	Paul Brainer et al.			Dry
325 Shelby.....	4	9 N	3 E	1,677	Bethel	Roy T. Moore & Black			Dry
326 Shelby.....	24	10 N	3 E	1,702	Cypress	Dan Moore et al.			Dry
327 Shelby.....	26	10 N	4 E	1,900	Basal Chester	Ogg & Joly			Dry
328 Shelby.....	32	10 N	4 E	1,920	Ste. Genevieve	Black et al.			Dry
329 Shelby.....	1	9 N	4 E	2,129	St. Louis	Kingwood Oil Co.			Dry
330 Shelby.....	3	10 N	5 E	2,175	Ste. Genevieve	Jackson & Fisher			Dry
331 Shelby.....	8	12 N	2 E	2,094	L. Mississippian	W. S. Tatum			Dry
332 Shelby.....	34	12 N	4 E	2,012	"McClosky"	Prunty Producing Co.			Dry
333 Vermilion....	13	18 N	14 W	1,430	"Niagaran"	A. M. Meyers et al.			Dry
334 Wabash.....	25	1 S	13 W	2,635	Ste. Genevieve	Hayes & Myer			Dry
335 Wabash.....	28	1 N	12 W	1,501	Biehl	Cecil Kneipp et al.			Dry
336 Wabash.....	9	1 S	12 W	1,515	Biehl	Myers et al.			Dry
337 Wabash.....	31	1 N	12 W	2,408	L. Mississippian	Harry T. Martin			Dry
338 Wabash.....	12	1 N	13 W	1,753	B. Pennsylvanian	Charles Foreman			Dry
339 Wabash.....	13	1 S	13 W	3,500	L. Mississippian	Guide & Jones			Dry
340 Warren.....	35	12 N	1 W	495	"Niagaran"	W. C. & W. Co.			Dry

TABLE 2.—(Continued)

Important Wildcats Drilled in 1938

County	Location			Total Depth, Ft.	Deepest Horizon Tested	Drilled by	Initial Production per Day		Field Name of New Discoveries and Extensions
	Sec. Survey	Twp. Lat.	Rge. Long.				Oil, U.S. Bbl.	Gas, Millions Cu. Ft.	
341 Warren.....	26	8 N	1 W	875	"Trenton"	L. E. Ketcherside et al.			Dry
342 Washington..	28	1 S	4 W	1,087	Bethel	Frost, Vickers & Patton			Dry
343 Washington..	16	3 S	2 W	1,426	B. Chester	B. D. Bitterman et al.			Dry
344 Washington..	22	1 S	1 W	1,925	L. Mississippian	Parshall-Graham Oil Co.			Dry
345 Washington..	8	1 S	3 W	1,499	L. Mississippian	Cox et al.			Dry
346 Washington..	4	2 S	5 W	1,238	L. Mississippian	Morris et al.			Dry
347 Washington..	11	1 S	1 W	1,030	B. Pennsylvanian	Salvage Oil & Fuel Co.			Dry
348 Washington..	6	3 S	2 W	1,443	Bethel	S. Townsend et al.			Dry
349 Washington..	25	1 N	1 W	1,425	L. Chester	C. E. Phelps			Dry
350 Washington..	31	1 N	2 W	1,715	L. Mississippian	Schlafly et al.			Dry
351 Washington..	33	1 S	5 W	900	Bethel	G. A. Morris			Dry
352 Washington..	19	1 S	5 W	1,683	Ste. Genevieve	Thompson Drilling Co.			Dry
353 Washington..	30	1 S	5 W	1,422	Bethel	Venture Oil Co.			Dry
354 Washington..	16	3 S	2 W	1,618	Ste. Genevieve	Bitterman et al.			Dry
355 Washington..	29	3 S	5 W	1,517	L. Mississippian	E. C. Lang			Dry
356 Washington..	12	1 S	1 W	1,680	Bethel	Morris et al.			Dry
357 Washington..	7	2 S	3 W	1,475	Ste. Genevieve	Hall et al.			Dry
358 Washington..	19	3 S	1 W	3,537	Bethel	Thompson Drilling Co.			Dry
359 Washington..	12	1 S	3 W	1,551	Ste. Genevieve	L. J. Gordon			Dry
360 Washington..	10	3 S	4 W	1,373	St. Louis	J. B. Oheroltzer			Dry
361 Wayne.....	16	3 S	7 E	3,287	"McClosky"	Texas Oil Co.	400		Aden
362 Wayne.....	14	1 N	9 E	3,275	Ste. Genevieve	B. C. Morrison			Dry
363 Wayne.....	21	1 N	5 E	3,200	Ste. Genevieve	Tarpon (Ken-nova) Oil Co.			Dry
364 Wayne.....	30	1 S	5 E	3,250	L. Mississippian	Gulf Refining Co.			Dry
365 Wayne.....	33	2 S	7 E	3,325	"McClosky"	H. H. Weinert, Inc.	400		North Aden
366 Wayne.....	16	3 S	9 E	3,438	"McClosky"	Iroquois Oil & Gas Co.	150		Leech Twp.
367 Wayne.....	21	2 S	7 E	3,443	Ste. Genevieve	H. H. Weinert, Inc.			Dry
368 Wayne.....	8	2 S	8 E	3,394	"McClosky"	Ed Martin & Stokes			Dry
369 Wayne.....	8	3 S	9 E	3,500	Ste. Genevieve	Al Stengle et al.			Dry
370 Wayne.....	33	1 S	7 E	3,336	Ste. Genevieve	Roche & Voyles			Dry
371 Wayne.....	2	1 S	8 E	3,100	Ste. Genevieve	A. P. Muhlbach	48		Mt. Erie
372 Wayne.....	4	2 S	7 E	3,269	Ste. Genevieve	Roche & Voyles	401		Boyleston
373 White.....	26	5 S	9 E	3,210	Ste. Genevieve	Mazda Oil Corp.			Dry
374 White.....	3	5 S	9 E	3,408	Ste. Genevieve	Palmer Corp.			Dry
375 White.....	12	7 S	8 E	3,065	Ste. Genevieve	Arab Petroleum Co.			Dry
376 White.....	12	4 S	9 E	3,919	Salem	Sun Oil Co.			Dry
377 Williamson..	4	10 S	2 E	2,100	Ste. Genevieve	Ge-Lo Oil Syndicate			Dry

In Proven Fields

Wildcats*

Number of wells drilling Dec. 31, 1938.....	280	91
Number of oil wells completed during 1938.....	1,959	25
Number of gas wells completed during 1938.....	20	6
Number of dry holes completed during 1938.....	170	359

* One-fourth mile or more from production.

TABLE 3.—*Summary of Drilling and Initial Production in Illinois for 1938*

County	Number of Wells Drilled in 1938			Total Initial Production		Footage Drilled in 1938	
	Total Completed	Total Producing		Oil, Bbl.	Gas, Millions Cu. Ft.	Total	Producing Wells
		Oil	Gas				
Bond.....	12	1	1	15	0.1	20,292	2,779
Brown.....	2	0	0	0	0.0	1,215	0
Bureau.....	2	0	0	0	0.0	1,797	0
Cass.....	1	0	0	0	0.0	585	0
Champaign.....	5	0	2 ²	0	1.6	3,305	0
Christian.....	4	0	0	0	0.0	5,595	0
Clark.....	24	7	3 ²	111	0.9	17,585	4,607
Clay.....	153	141	0	65,970	0.0	469,074	430,398
Clinton.....	444	398	0	54,228	0.0	610,632	542,219
Coles.....	7	0	0	0	0.0	14,740	0
Crawford.....	19 ¹	7	1 ²	32	0.3	23,717	9,801
Cumberland.....	5	0	0	0	0.0	12,547	0
Edgar.....	5	0	0	0	0.0	6,688	0
Effingham.....	8	0	0	0	0.0	22,240	0
Fayette.....	575	509	1 ²	117,094	4.0 ⁴	910,818	804,573
Franklin.....	6	0	0	0	0.0	657	0
Fulton.....	1	0	0	0	0.0	18,706	0
Hamilton.....	1	0	0	0	0.0	3,460	0
Hancock.....	2	0	0	0	0.0	1,099	0
Hardin.....	1	0	0	0	0.0	2,345	0
Iroquois.....	1	0	0	0	0.0	1,096	0
Jackson.....	3	0	0	0	0.0	8,042	0
Jasper.....	6	0	0	0	0.0	15,609	0
Jefferson.....	68	40	0	9,031		148,432	82,099
Lawrence.....	36	10	15 ³	342	151.0	48,666	33,543
McDonough.....	7	2	0	3	0.0	4,008	869
Macon.....	2	0	0	0	0.0	4,077	0
Macoupin.....	9	0	2 ²	0	1.4	6,983	865
Madison.....	4	0	0	0	0.0	5,553	0
Marion.....	729	643	0	191,766	0.8 ⁴	1,258,330	1,096,453
Menard.....	1	0	0	0	0.0	1,570	0
Monroe.....	1	0	0	0	0.0	780	0
Montgomery.....	7	0	1 ²	0	0.1	6,893	905
Morgan.....	4	0	0	0	0.0	4,165	0
Moultrie.....	2	0	0	0	0.0	3,871	0
Perry.....	5	0	0	0	0.0	9,485	0
Piatt.....	1	0	0	0	0.0	3,021	0
Pope.....	1	0	0	0	0.0	1,760	0
Randolph.....	5	0	0	0	0.0	7,124	0
Richland.....	180	135	0	68,825	0.0	560,371	412,661
St. Clair.....	11	5	0	745	0.0	7,787	3,623
Saline.....	4	0	0	0	0.0	4,463	0
Sangamon.....	1	0	0	0	0.0	2,257	0
Schuylerville.....	1	0	0	0	0.0	850	0
Shelby.....	17	0	0	0	0.0	32,844	0
Vermilion.....	1	0	0	0	0.0	1,430	0
Wabash.....	23	6	0	225	0.0	38,627	9,328
Warren.....	2	0	0	0	0.0	1,370	0
Washington.....	19	0	0	0	0.0	29,544	0
Wayne.....	107	80	0	35,571	0.0	334,740	246,673
White.....	4	0	0	0	0.0	13,602	0
Williamson.....	1	0	0	0	0.0	2,100	0
Total.....	2,539	1,984	26	543,958	160.2	4,766,047	3,677,373

¹ Includes two pressure wells.² Gas used on the lease and for local heating and lighting.³ Two wells producing gas, which is used on the lease.⁴ Gas produced with the oil.

TABLE 4.—*Total Initial Production of Wells Drilled in New Fields for 1938*

Field	Barrels	Field	Barrels	Field	Barrels
Patoka.....	980	Dix.....	8,143	St. James.....	3,638
Clay City.....	70,786	Aden.....	1,165	Roaches.....	464
Rinard.....	0	Flora.....	2,101	Elk Prairie.....	20
Noble.....	51,996	Schnell.....	2,663	Sorento.....	15
Cisne.....	12,013	Lake Centralia-		Boyleston.....	1,203
Centralia (New)...	78,157	Salem.....	165,588	Marcoe.....	204
Beecher City-Lou-		Ina.....	200	Mt. Erie.....	48
den.....	113,456	North Aden.....	19,435	Total.....	546,900
Olney.....	14,166	Leech Township...	459		

TABLE 5.—*Wells in the New Fields, December 31, 1938*

Field, County	Produc-ing Wells	Dry Holes ¹	Drilling Wells	Rigs Stand-ing	Rigging Up	Loca-tions	Acres
Patoka, Marion.....	104 ²	20	0	0	0	0	465
Clay City, Clay, Wayne.....	222	16	3	7	1	3	4,750
Rinard, Wayne.....	1	2	0	3	0	1	10
Noble, Richland.....	145 ³	29	0	2	1	0	3,150
Cisne, Wayne.....	25	6	3	0	1	1	575
Centralia (New), Clinton, Marion	526	36	3	15	1	1	2,000
Beecher City-Louden, Fayette...	488	25	17	67	12	2	15,860
Olney, Richland.....	30	11	2	1	0	0	380
Dix, Jefferson.....	35	0	1	1	0	0	615
Aden, Wayne.....	4	2	0	0	0	0	160
Flora, Clay.....	9	2	2	3	0	0	140
Schnell, Richland.....	4	5	0	0	0	0	40
Lake Centralia-Salem, Marion..	480	17	24	97	11	23	7,520
Ina, Jefferson.....	1	2	0	0	0	0	10
North Aden, Wayne.....	40	4	1	3	1	2	690
Leech Township., Wayne.....	2	0	0	0	3	0	20
St. James, Fayette.....	24	0	4	3	0	3	270
Roaches, Jefferson.....	2	0	1	2	0	1	20
Elk Prairie, Jefferson.....	1	0	0	0	0	0	10
Sorento, Bond.....	1	0	0	0	0	0	10
Boyleston, Wayne.....	1	0	2	0	0	0	10
Marcoe, Jefferson.....	1	0	0	0	0	0	10
Mt. Erie, Wayne.....	1	0	0	0	0	0	10
Russellville (gas), Lawrence.....	15	5	0	2	0	1	500
	2,157	182	63	206	31	38	37,225

¹ Within $\frac{1}{4}$ mile of production.² Eleven producing wells were abandoned during 1938.³ Eight producing wells were abandoned during 1938.

OIL AND GAS DEVELOPMENT IN ILLINOIS IN 1938

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TABLE 6.—Discovery Wells of the New Fields and Extensions in Illinois for 1938

Field	County	Company, Well and Location	Total Depth, Ft.	Depth, Ft.	Name	Producing Formation	
						Initial Production, Bbl.	Type of Discovery
North Olney.....	Richland	Pyramid Oil Co., University of Chicago 1, NW NW NW 26-4N-10E	3,036	3,030	McClosky	1,000	Field
Dix.....	Jefferson	Carter Oil Co., Tate 1, C W NW NE 10-1S-2E	1,990	1,980	Bethel	58	Field
Aden.....	Wayne	H. H. Weirert, Inc., C E SW 16-3S-7E	3,287	3,276	McClosky	385	Field
North Aden.....	Clay	Kingswood Oil Co., Graham 1, C SW NE 33-2S-7E	3,325	3,308	McClosky	400	Field
Flora.....	Clay	Oil Co., Hardy 1, NW SE 9-3N-6E	2,983	2,973	McClosky	275	Field
Schnell.....	Richland	Wicklund Development Co., McCauley 1B, NE SW 7-2N-9E	2,967	2,958	McClosky	459	Extension
Lake Centralia-Salem.....	Marion	Texas Co.; Tate 1, NW NW 5-1N-2E	1,810	1,692	Bethel	732	Field
Ina.....	Jefferson	Nollmen Oil & Gas Co., Benoit-Kelley 1, NE NW NE 25-4S-2E	3,007	3,002	St. Louis	200	Field
St. James.....	Fayette	Rosenthal et al., Washburn 1, NE SE NW 30-6N-3E	1,622	1,600	Cypress	188	Field
Leech Township.....	Wayne	Iroquois Oil & Gas., Walker 1, C NW NW NW 16-3S-9E	3,438	3,428	McClosky	150	Field
Roaches.....	Jefferson	Magnolia Petroleum Co., Harvey 1, NW NE SW 22-2S-1E	2,263	2,239	McClosky, Rosalie	217	Field
Elk Prairie.....	Jefferson	Benedum-Trees, Jefferson Oil & Gas 1, C NW NE 16-4S-2E	2,751	2,718	McClosky	25	Field
Boyleston.....	Wayne	Roche & Boyles, McPherson 1, C S SE NE 4-2S-7E	3,269	3,253	McClosky	400	Field
North Noble.....	Richland	Pure Oil Co., Wakefield 1, C W NW NE 26-4N-9E	2,583	2,564	Cypress	514	Extension
West Clay City.....	Clay	Wiser Oil Co., Irwin 1, C N SE NW 12-2N-7E	3,076	3,060	McClosky	273	Extension
Russellville (gas).....	Lawrence	Kesh et al., Gray 1, C N SE NW 13-4N-11W	1,961	1,960	Buchanan	2,651	Field
Sorento.....	Bond	De Mayo et al., Dresser 1, SW NE NW 21-6N-4W	1,830	1,800	Niagaran	753	Field
Marcoe.....	Jefferson	Magnolia Petroleum Co., Dare 1, SE SW NE 22-3S-2E	2,765	2,746	McClosky	237	Field
Mt. Erie.....	Wayne	Mulbach, Anderson 1, NW NW NW 2-1S-8E	3,092	3,080	McClosky	48	Field
Clay City.....	Clay	Danville Oil Drillers, Inc., C. D. Duff 1, NE SE NE 19-3N-8E	3,047	3,016	McClosky	124	Extension
Clay City.....	Clay	Wiser Oil Co., Irwin 1, C N SE NW 12-2N-7E	3,076	3,012	McClosky	273	Extension
Centralia.....	Clinton	Adams Oil & Gas Co., Heffter 1, SE NE 13-1N-1W	1,370	1,350	Bethel	275	Extension
Beecher City-Louden.....	Fayette	Farely et al., H. Liley 1, SE SW SE 16-8N-3E	1,573	1,561	McClosky	35	Extension
Noble.....	Richland	Max Pray et al., Runyon 1, SE SW SE 21-3N-9E	3,121	3,036	McClosky	139	Extension
Noble.....	Richland	Mammoth Producers & Refiners, Bell 1, NW NE SW 28-3N-9E	3,064	3,026	McClosky	2,162	Extension
Noble.....	Richland	American National Drilling Co., Eversen 1, NE NE SE 23-3N-9E	3,080	3,043	McClosky	20	Extension

¹Thousands of cubic feet.²Estimated.

TABLE 7.—*Completions and Production in Illinois
from January 1, 1937 to December 31, 1938*

Date	Completions	Number of Producing Wells	Production, Thousands of Barrels		
			New Fields	Old Fields ¹	Total ²
1937					
January.....	5	1		368	368
February.....	6	6		343	343
March.....	9	5		410	410
April.....	15	8		386	386
May.....	14	10		416	416
June.....	22	16	53	410	463
July.....	27	18	120	410	530
August.....	49	31	266	408	674
September.....	92	63	452	397	849
October.....	76	56	520	392	912
November.....	73	41	592	398	990
December.....	61	37	755	330	1,085
	449	292	2,884 ³	4,542	7,426
1938					
January.....	57	40	809	319	1,128
February.....	59	35	778	330	1,108
March.....	107	82	918	412	1,330
April.....	89	71	1,061	327	1,388
May.....	122	107	1,076	364	1,440
June.....	192	147	1,093	369	1,462
July.....	176	136	1,284	358	1,642
August.....	207	149	1,691	371	2,062
September.....	255	199	2,194	359	2,553
October.....	431	345	2,431	337	2,768
November.....	394	330	2,722	345	3,067
December.....	452	369	3,608	373	3,981
	2,541	2,010	19,665	4,264	23,929

¹ Difference between total production for the new fields and the U. S. Bureau of Mines total.

² The figures in the total production are from the U. S. Bureau of Mines. Other figures are from various sources.

³ This figure is greater than the total by months because monthly production figures from the new fields were not available until June 1937.

Gas was first discovered in the vicinity of Russellville, Ill., in northeastern Lawrence County, on March 17, 1937. The Warren Hastings et al., Lagow No. 1A, drilled in sec. 30, T. 5 N., R. 10 W., obtained production in a Pennsylvanian sandstone at a depth of 619 ft. The initial production was 824,000 cu. ft. Another producing well was drilled in the same section a short time later and four dry holes were drilled offsetting the two producers. The Kentucky Natural Gas Corporation

of Owensboro, Ky., constructed a 3-in. line from the Oaktown, Ind., gas field to take the gas from these wells.

In July 1938, the Joe Kels et al., Scott Gray No. 1, drilled in sec. 13, T. 4 N., R. 11 W., obtained production in the Buchanan sandstone at a depth of 1061 ft. The initial production was 2,651,000 cu. ft. The well was deepened a few feet in the sand and the production was increased to 16,000,000 cu. ft. Thirteen producing wells were drilled in the field during 1938, and drilling activity is still continuing. The highest initial productions were from 20 to 30 million cubic feet and the average for all of the wells was 14 million. The present field includes the N $\frac{1}{2}$ of sec. 13, the S $\frac{1}{2}$ of sec. 12, T. 4 N., R. 11 W., and the SW $\frac{1}{4}$ of sec. 7, T. 4 N., R. 10 W. Deeper potential oil-producing and gas-producing formations have not been tested in the field. The northwest edge of the field has been fairly well defined by three dry holes. The proven acreage in both fields at the end of the year totaled 500.

The Kentucky Natural Gas Corporation during 1938 replaced the 3-in. line from Oaktown to sec. 30, T. 5 N., R. 10 W., with a 6-in. line, and constructed two 4-in. lines to the Buchanan sand field.

An analysis of the gas from the north field shows that the gas is composed mainly of methane with only a trace of ethane, less than 1 per cent carbon dioxide and a small percentage of nitrogen. The gas from the south field is also composed largely of methane with a small percentage of ethane, nitrogen and carbon dioxide. The B.t.u. value of both gases is approximately 950 per cubic foot.

IMPROVED RECOVERY METHODS .

Repressuring.—Little new work was undertaken by the oil companies during 1938 to increase recovery of oil in the old fields of Illinois. Practically all of the previous repressuring plants were continued in operation.

In the Carlyle pool, Clinton County, a water-flooding operation was discontinued in October 1937, and air repressuring started, using the same input wells previously used for water in December 1937. Continuous operation of the pressure plant began in February 1938.

In the Louden (Beecher City) field the Carter Oil Co. has undertaken pressure maintenance with gas produced from their leases in sec. 15, T. 8 N., R. 3 E. Five input wells were drilled in the section (five-spot). Both the Cypress and Bethel sands are repressured in each well. A packer is set below the Cypress sand and the gas to the Bethel sand passes through tubing, whereas that to the Cypress is from the casing. The casing is perforated for both sands. The project is just getting started and no results have been noticed, as the adjacent producing wells are prorated. An average of about 15,000 cu. ft. of gas is injected into each sand per day. Two 300-hp. compressors are being used.

It is reported that a similar pressure-maintenance project is planned by some of the operators in the Salem pool.

Acidization.—Ten acidizations were reported in the old southeastern field, of which seven yielded substantial increases in production and three yielded no increase. Acidizing is standard practice in completing wells in the central basin fields producing from the McClosky.

PETROLEUM CONFERENCE

The sixth annual conference of the Illinois-Indiana Petroleum Association was held at Robinson, June 4, 1938, and was attended by more than 400 persons. The technical sessions included papers on geology and field operating problems.

OUTLOOK

Drilling development exceeding that of 1938 may be expected in 1939. Multiple sand production is proved in the Salem and Louden fields, which will require the drilling of many additional wells. The large amount of wildcat drilling will doubtless result in numerous discoveries of new fields in 1939.

ACKNOWLEDGMENTS

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FOOTNOTES TO COLUMN HEADINGS—TABLE 1

^a Areas where both oil and gas are produced are included under heading "Oil."
^b Wells producing both oil and gas are classified as "Producing Oil."
^c Gas wells are those producing gas, but include those producing wet gas, from which casinghead gasoline may be produced.

^d Bottom-hole pressures are preceded by "e." All other figures represent pressures at casinghead with well closed.

^e Cam, Cambrian; Ord, Ordovician; Sil, Silurian; Dev, Devonian; Mis, Mississippian; MisL, Lower Mississippian; MisU, Upper Mississippian; Pen, Pennsylvanian; Per, Permian; Tri, Triassic; Jur, Jurassic; CreL, Lower Cretaceous; CreU, Upper Cretaceous; Eoc, Eocene; Olig, Oligocene; Mio, Miocene; Pli, Pliocene.

^f S, sandstone; SH, sandstone, shaly; Ss, soft sand; H, shale; L, limestone; LS, limestone, sandy; C, chalk; A, anhydrite; D, dolomite; Da, arkosic dolomite; GW, granite wash; P, serpentine; O, oölite; Slt, siltstone.

^g Figures are entered only for fields where the reservoir rock is of pore type. Figures represent ratio of pore space to total volume of net reservoir rock expressed in per cent. "Por" indicates that the reservoir rock is of pore type but said ratio is not known by the author. "Cav" indicates that the reservoir rock is of cavernous type; "Fis," fissure type.

^h A, anticline; AF, anticline with faulting as important feature; Af, anticline with faulting as minor feature; AM, accumulation due to both anticlinal and monoclinal structure; H, strata are horizontal or near horizontal; MF, monocline-fault; MU, monocline-unconformity; ML, monocline-lens; MC, monocline with accumulation due to change in character of stratum; MI, monocline with accumulation against igneous barrier; MUP, monocline with accumulation due to sealing at outcrop by asphalt; D, dome; Ds, salt dome; T, terrace; TF, terrace with faulting as important feature; N, nose; S, syncline.

ⁱ Information will be found in text as indicated by symbols; A, name of author, other than above, who has compiled the data on the particular field; C, chemical treatment of wells; G, gas-oil ratios; P, proration; U, unit operation; R, references; W, water; O, other information.

EXPLANATION

Generally in Table 1 the unit for presentation of data is a field. For our purposes a field is defined as the whole of a surface area wherein productive locations are continuous. Such unit commonly includes and surrounds nonproductive areas. Such unit commonly includes a great variety of geologic conditions—several units of continuous productive reservoirs of distinctly different structure and of distinctly different stratigraphy. Therefore it is hoped that our authors will subdivide "field" so as to enable students to make analyses that may have scientific and/or commercial value.

As to each space in the tabulation, it is either (1) not applicable, (2) the proper entry is not determinable, (3) the proper entry is determinable, but not determinable from data available to the author, (4) the proper entry is determinable by the author. In spaces not applicable, the author will please draw horizontal lines; in spaces where the proper entries are not determinable, the author will please insert *x*; in spaces where the proper entries are determinable but not determinable from data available to the author, the author will please insert *y*; in spaces where the proper entries are determinable by the author he will, of course, make such entries. Generally, *y* implies a hope that in some future year a definite figure will be available.

Inability to determine precisely the correct entry for a particular space should not lead the author to insert merely *y*. Contributions of great value may be made by the author in many cases where entries are not subject to precise determination. In such cases the author should use his good judgment and make the best entry possible under the circumstances. For many spaces, the correct entries represent the opinion of the author (for example, "Area Proved") and in such cases the entries need not be hedged to such extent as in cases where the quantities are definite yet can be ascertained only approximately by the author.

In cases under definite headings but where figures are only approximate, the author may use *x*. For example, if the total production of a field is known to be between 1,800,000 and 1,850,000, the author may report 1,8xx,xxx; or if the production is between 1,850,000 and 1,900,000, the author may report 1,9xx,xxx.

Where a numeral is immediately to the left of *x* or *y*, such numeral represents the nearest known number in that position.

As to quantity of gas produced from many fields the question will arise as to whether the figures should include merely the gas marketed or should include also estimates of gas used in operations and gas wasted. Although rough approximations

may be involved, our figures should represent as nearly as possible the total quantity of gas removed from the reservoir.

While we have not provided a column for showing the thickness of the productive zone, generally the difference between average depth to bottoms of productive wells and average depth to top of productive zone will represent approximately the average thickness of the productive zone. For fields where this is not true because of unusually high dips, or for other reasons, it is suggested that the authors indicate in their texts the approximate average thickness of the productive zone.

The figure representing net thickness of producing rock should correspond to the total of the net portions of the producing zone which actually yield oil into the drill hole. It is recognized that for some fields the authors can make only rough guesses—so rough that figures would be of no value. In such cases the authors should enter either *x* or *y*, whichever is more appropriate.

We are particularly anxious to have every author give due consideration to the determination of structural conditions of each oil and/or gas body. Please consider each oil and/or gas reservoir and indicate its structure. The mere fact that a reservoir is on an anticline is not proof that the structural condition affecting the accumulation is anticlinal; for example, an oil and/or gas body limited by the upper margin of a lens on the limb of an anticline is "ML" as to structure. By all means, if the oil body occupies any position in the lens other than its upper limit, please so indicate clearly by footnote, for "ML" means, unless modified, that the accumulation is at the upper part of the lens. In every case where the oil and/or gas body terminates short of the up-dip continuity of the reservoir, please carefully check your evidence and then appropriately record your conclusion. "Terrace," "Nose" and "Syncline" are the only terms in our legend which presume such continuity.

In Table 2 are listed the important wildcat wells completed during the year. By the term "important" is meant: wells discovering new fields; wells resulting in the discovery of important extensions to old fields; wells discovering new zones in old fields; wells condemning important areas or resulting in significant stratigraphic information, even if the wells are dry; and exceptionally deep wells. At the foot of this table the total number of wells drilled in each district is given, segregated as to oil wells, gas wells and dry holes. The number of wells drilling on Dec. 31, 1938 are in two divisions, designated as wildcat wells and wells in proven fields.

